Instructions - Parts

# SmartWare™ Shot Dispense Kit

3A0294G

EN

**Accurate metered dispensing kit for one component materials. Kits are compatible with Check-Mate® pumps and Dura-Flo™ pumps; both alone and as part of a supply system. For professional use only.**

**Not approved for use in European explosive atmosphere locations.**

Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

## Kit 262370 for D200 and D60

For D200 3 inch dual post ram with NXT®2200 and larger air motors
For D60 3 inch dual post ram with NXT2200 and larger air motors

## Kit 262371 for D200

For D200 3 inch dual post ram with NXT1800 and smaller air motors

## Kit 262372 for D200S

For D200S 6 inch dual post ram with NXT2200 and larger air motors

## Kit 262373 for S20

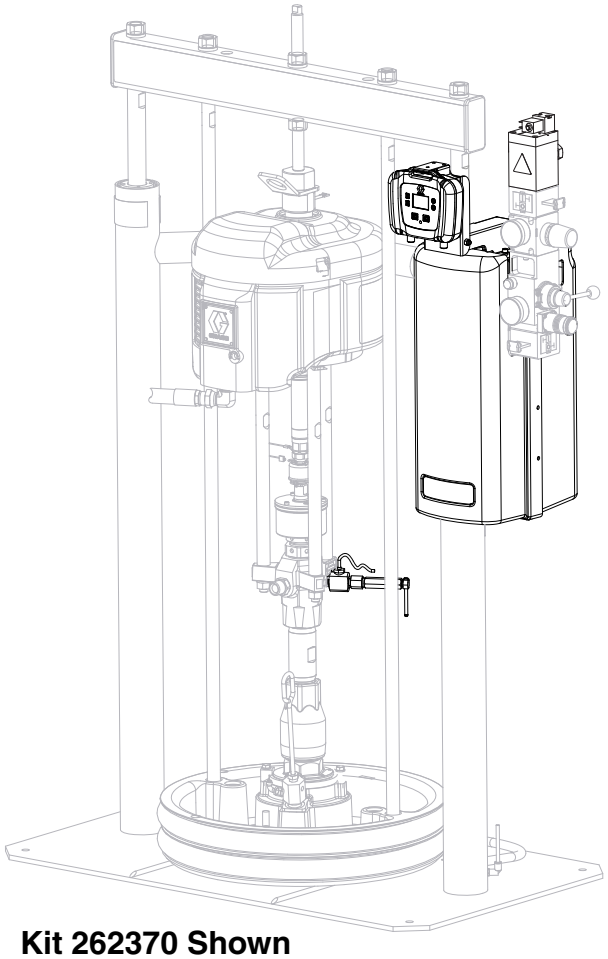
For S20 3 inch single post ram NXT2200 and larger air motors

## Kit 262374 for S20

For S20 3 inch single post ram with NXT1800 and smaller air motors

## Kit 262375 for pumps

For wall mount or floor stand pump with NXT2200 and larger air motors



**Kit 262370 Shown**

PROVEN QUALITY. LEADING TECHNOLOGY.

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# Related Manuals

Manuals are available at www.graco.com.

Component manuals in U.S. English:

| Manual | Description |
|---|---|
| 313526 | Supply Systems Operation |
| 313527 | Supply Systems Repair-Parts |
| 312376 | Check-Mate® Pump Packages Instructions-Parts |
| 312375 | Check-Mate® Displacement Pumps Instructions-Parts |
| 311827 | Dura-Flo™ Displacement Pumps (145cc,180cc, 220cc, 290cc) Instructions-Parts |
| 311825 | Dura-Flo™ Displacement Pumps (430cc, 580cc) Instructions-Parts |
| 311828 | Dura-Flo™ Pump Packages (145cc, 180cc, 220cc, 290cc) Instructions-Parts |
| 311826 | Dura-Flo™ Pump Packages (430cc, 580cc) Instructions-Parts |
| 312796 | NXT® Air Motor (Mxxxxx models) Instructions-Parts |
| 311238 | NXT® Air Motor (Nxxxxx models) Instructions-Parts |
| 3A1161 | Foot Switch Kit Instructions-Parts |
| 3A1162 | Changeover Solenoid Kits Instructions-Parts |

# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

## ⚠ WARNING

**FIRE AND EXPLOSION HAZARD**

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

**SKIN INJECTION HAZARD**

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

## ⚠ WARNING

### EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

### MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

### TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDS's to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

### PERSONAL PROTECTIVE EQUIPMENT

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer

# System Description

SmartWare shot dispense kits contain everything needed to convert a supply system or a pump system into a dosing system. The kits enable you to dose a preset amount of single-component material without using flowmeters or gear meters in the fluid stream. Instead, a sensor tracks the pump position so that the pump acts like a flowmeter. The amount dispensed is based on the pump size.

## Typical Applications

- Cartridge fill
- Potting
- Encapsulating
- Mold making
- Batching or kitting

## Compatibility

SmartWare shot dispense kits are compatible with J series NXT2200 and larger air motors, and D series NXT1800 and smaller air motors.

## Critical System Parameters

If any of the following parameters are below the recommended value, see **Appendix B - Tips**, page 102, for tips for better accuracy.

Percentage (shot size/pump size) -

Percentage (overshoot/shot size) -
(function of valve time and pump speed)

Air motor pressure (PSI) -

Pump Speed (CPM) -

# Theory of Operation

SmartWare shot dispense kits do not use flowmeters in the material path to measure the volume pumped. Instead the kit measures the volume pumped by using the following calculation. See FIG. 1 for a graphical representation.

*Area of the pump piston x distance traveled (measured by the linear sensor) = volume pumped*

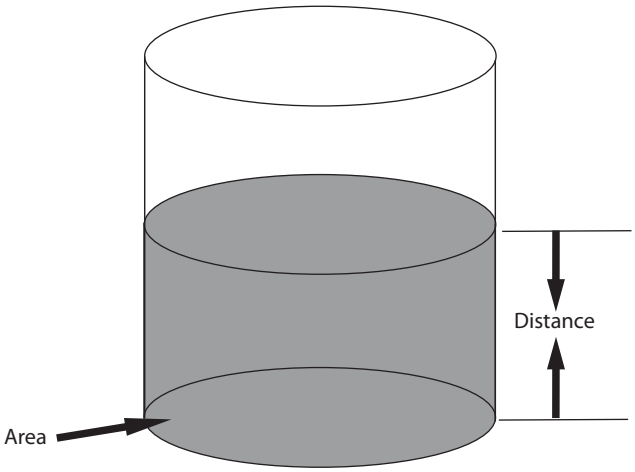



**FIG. 1: Volume Pumped**

When the system receives the start signal, the dispense valve opens. Once the correct distance is traveled, which equates to the desired shot volume, the dispense valve closes and the pump stalls.

Just like a car does not stop the instant you push on the brake, the SmartWare kit pump does not stop pumping the instant it receives a stop signal. Therefore, during the time it takes for the dispense valve to physically close fluid is still being pumped; the volume pumped during this time is called the overshoot volume. See FIG. 2 for a a graphical representation.

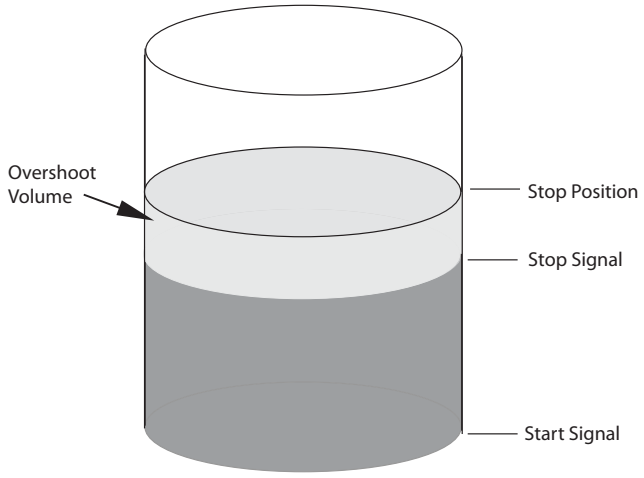


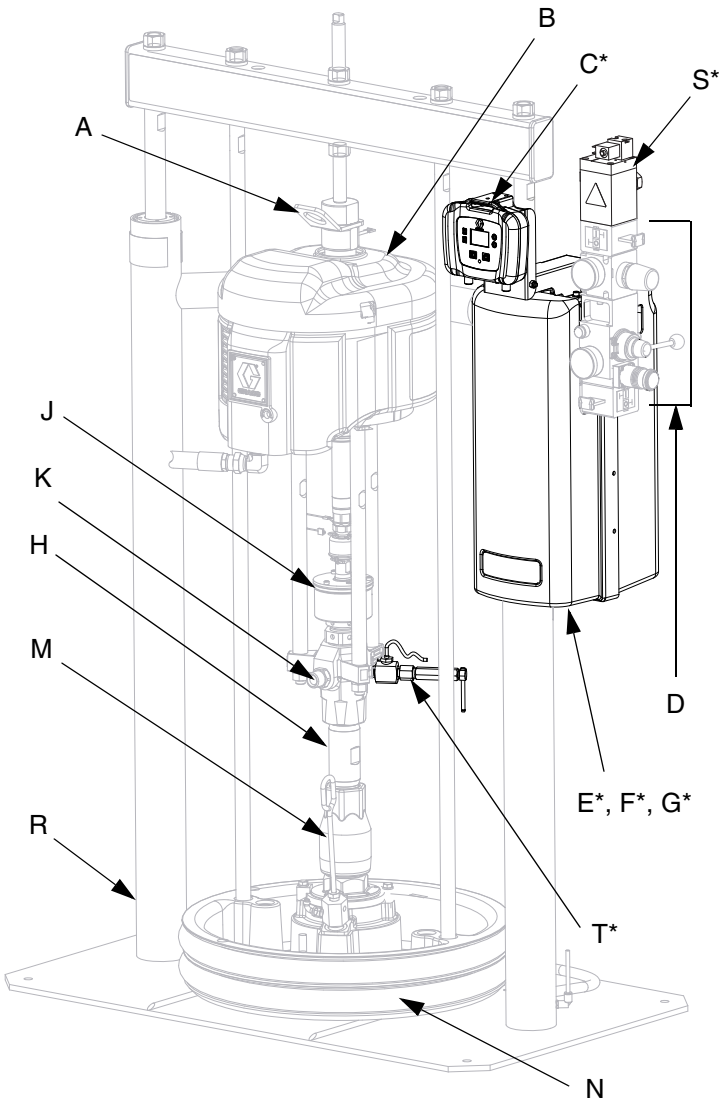

**FIG. 2: Overshoot Volume**

The SmartWare kit automatically compensates for overshoot by taking previous shots into consideration and then sending the stop signal early.

The pressure transducer compensates for pump travel during changeovers. Since only a few shots end in a changeover, this compensation will take longer than the basic overshoot compensation.

# Component Identification

**SmartWare Kit for D200 and D60 Rams**




**SmartWare Kit for S20 Rams**

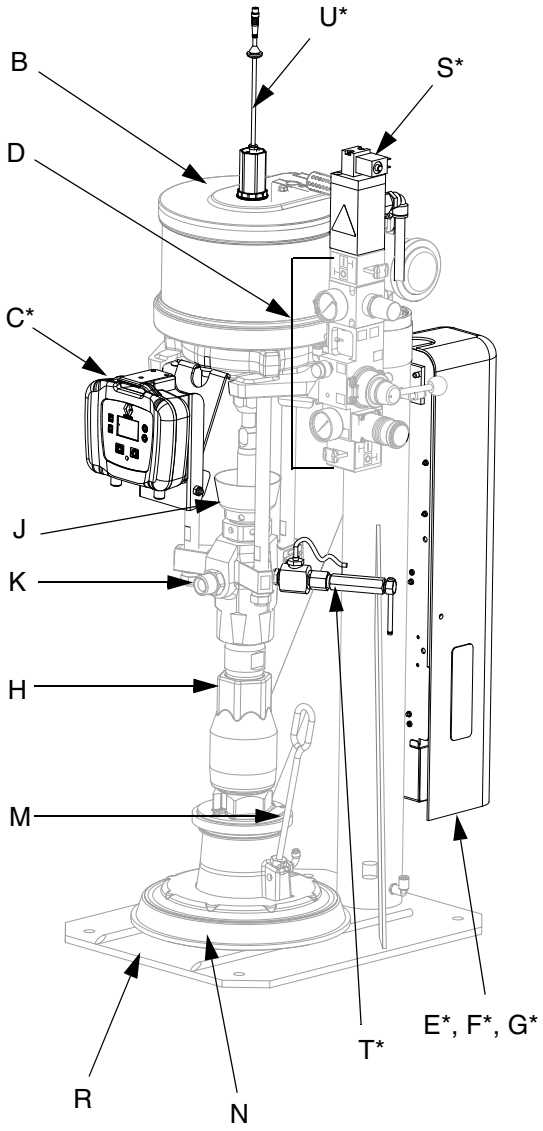



**FIG. 3: Component Identification**

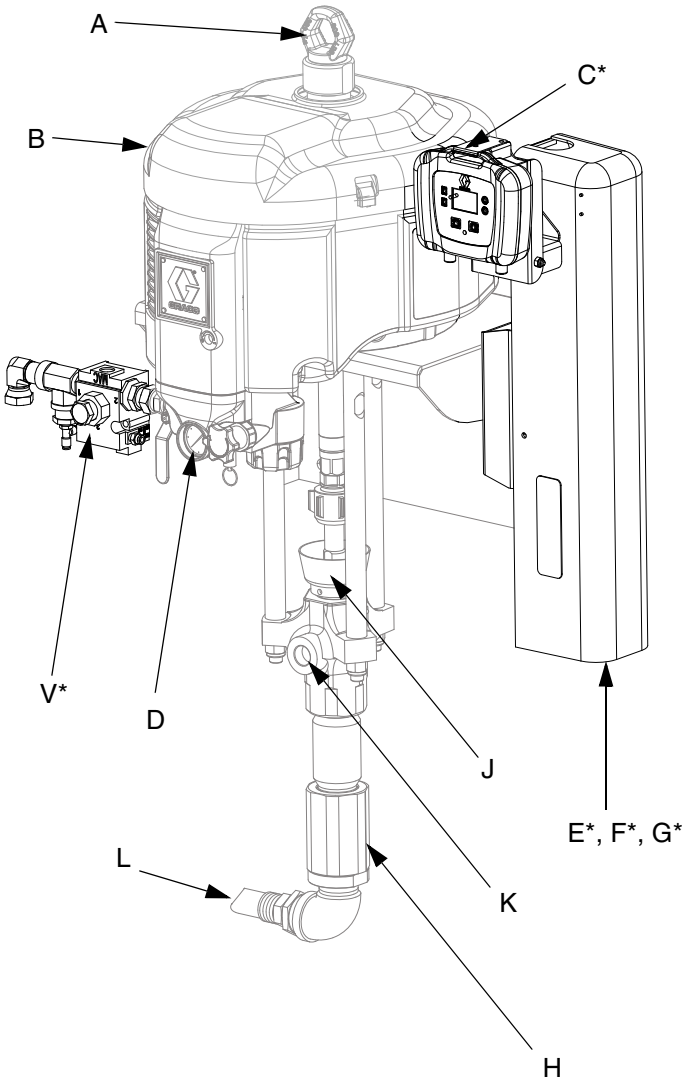
**Key:**

A Lift Ring
B Air Motor
C* Display Module
D Air Controls
E* Air Solenoid (under shroud)
F* Power Supply (under shroud)
G* Power Switch (within shroud)
H Displacement Pump
J Wet Cup
K Fluid Outlet
L Fluid Inlet
M Platen Bleed Port
N Platen
R Ram
S* Air Valve Assembly
T* Pressure Sensor Assembly
U* Linear Sensor Assembly

* *Included in SmartWare kits.*

## Component Identification (cont.)

### SmartWare Kit for Wall Mount Pumps




### SmartWare Kit for Floor Mount Pumps

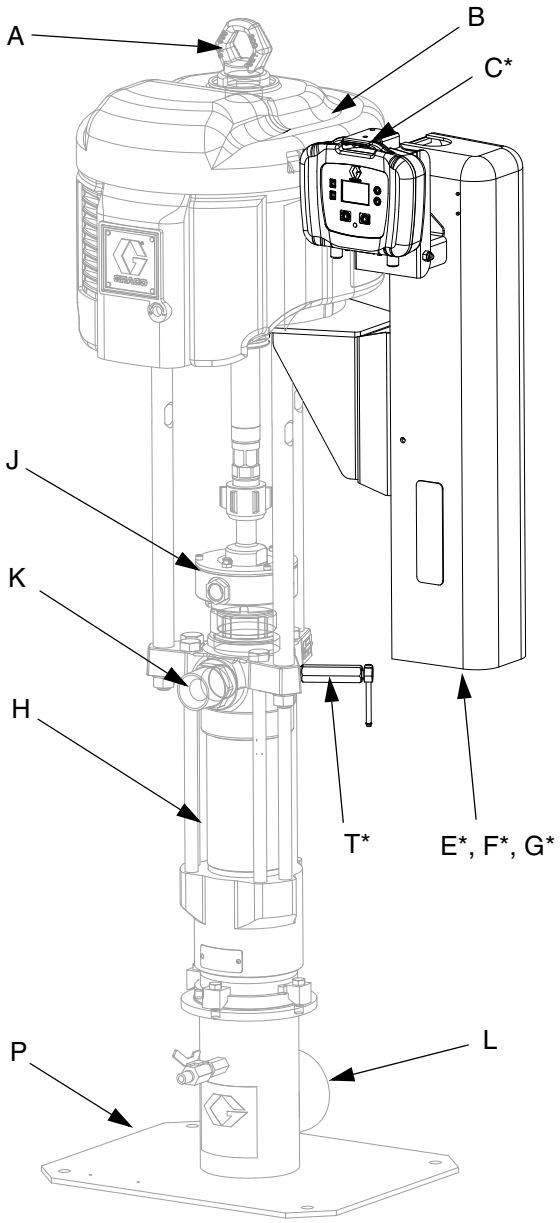



**FIG. 4: Component Identification**

**Key:**

A Lift Ring
B Air Motor
C* Display Module
D Air Controls
E* Air Solenoid (under shroud)
F* Power Supply (under shroud)
G* Power Switch (within shroud)
H Displacement Pump
J Wet Cup
K Fluid Outlet
L Fluid Inlet
P Floor Mount Stand
T* Pressure Sensor Assembly
V* Valve Assembly

* *Included in SmartWare kits.*

# User Interface

**FIG. 5: Display Module**

**NOTICE**

To prevent damage to soft key buttons, do not press the buttons with sharp objects such as pens, plastic cards, or fingernails.

**Table 1: Display Module Button Functions**

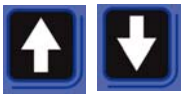
| Button | Function |
|---|---|
| Mode | Select between Run and Setup modes. |
| Shot | Start the present operation mode. Possible operation modes: shot mode, sequence mode, manual mode, and park mode |
| Arrows Up/Down  | Navigate up or down within a screen or to a new screen. |
| Soft Keys | Soft keys activate the mode or action represented by the icon next to each soft key. See Table 2 for soft key icons and actions. |
| | Top Soft Key: Turn air solenoid on/off, pause shot, continue shot, edit data, accept edited data, or move right within a number field. |
| | Bottom Soft Key: Enter a screen, exit a screen, cancel a shot, or cancel edited data. |

**Table 2: Display Soft Key Icons**

| Icon | Function |
|---|---|
| Enter Screen | In screens that have editable fields, press to access the fields and make changes. |
| Exit Screen | In screens that have editable fields, press to exit edit mode. |
| Enter | In screens that have editable fields, press to make data selections or to enter changes. |
| Right | In screens that have editable fields, press to move to the right while in a field. |
| Cancel | Cancel a selection or edited data. Returns to the original data. Cancel a shot when the shot is active. |
| Reset | Reset the selected field or value. |
| Pause | Pause the shot that is currently active. |
| Continue | Continue the shot that is currently active. |
| Air On/Off | Turn the air valve on and off. |
| Start Process | Start the automatic calibration process. |

## User Interface Display

For details regarding the user interface display, see , page 92.

### Display Screen Components

The following figures call out the navigational, status, and general informational components of each display screen.

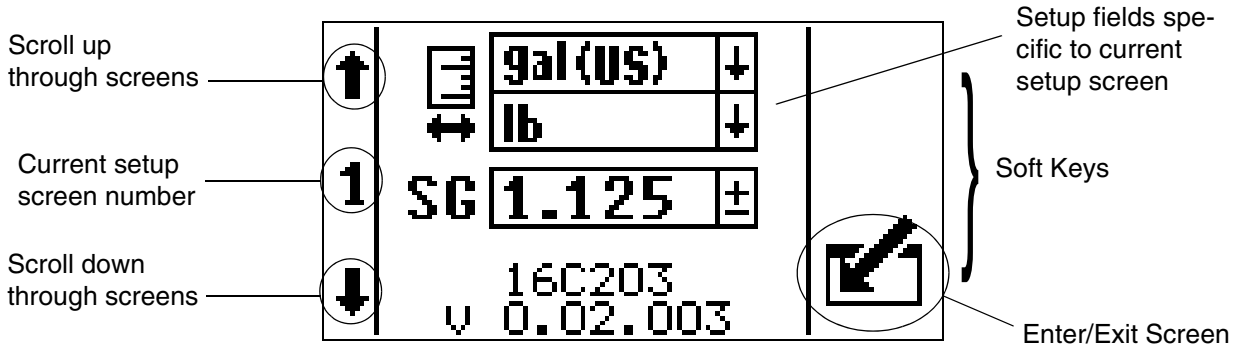



**FIG. 6: Setup Mode Screen Components**

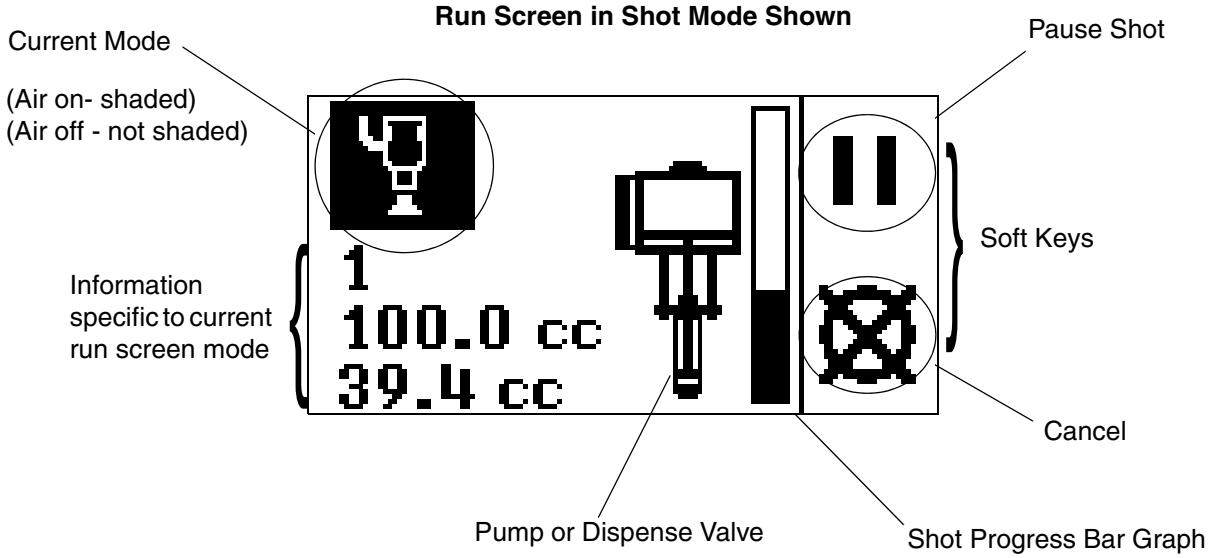
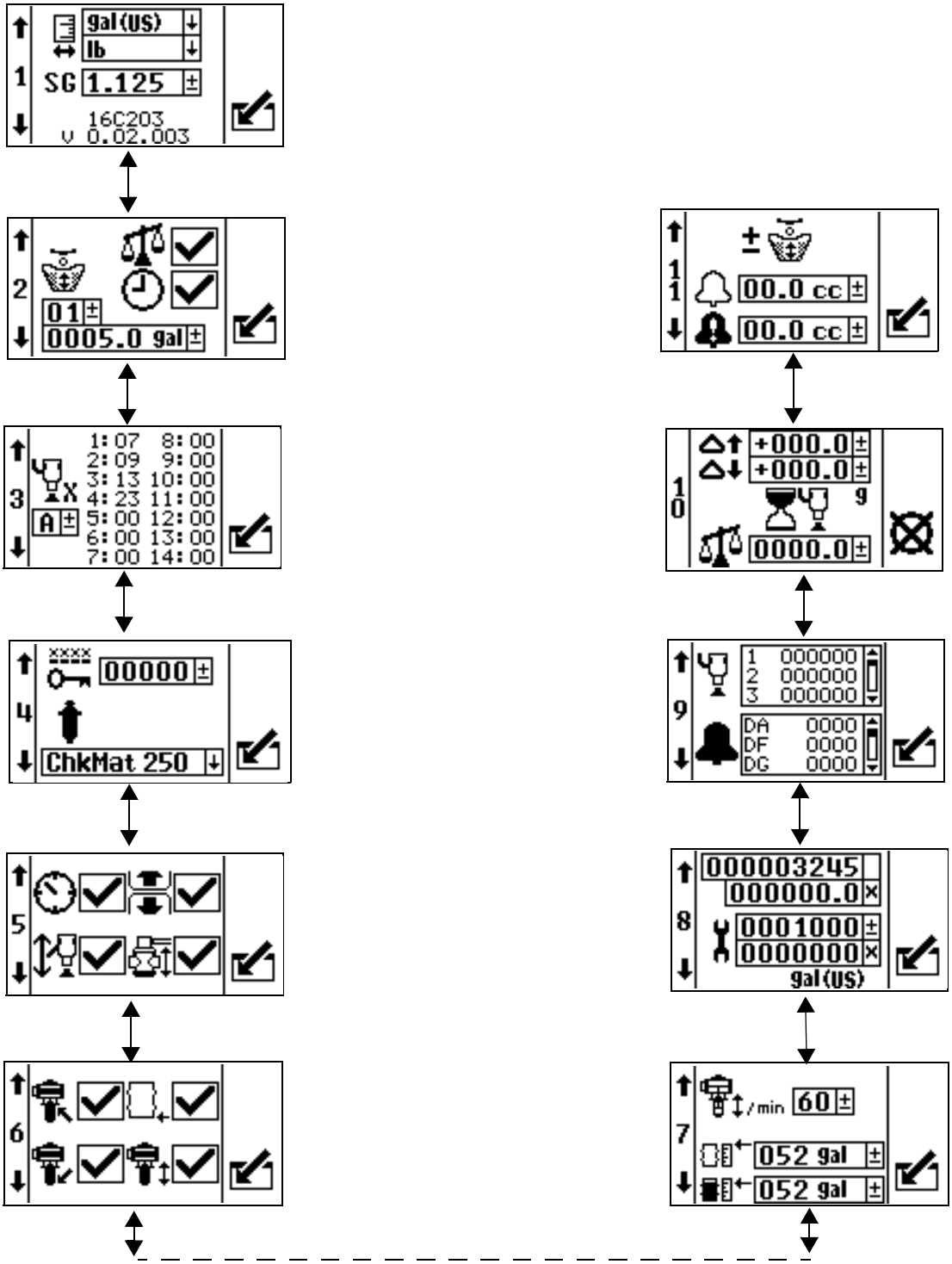



**FIG. 7: Run Mode Screen Components**

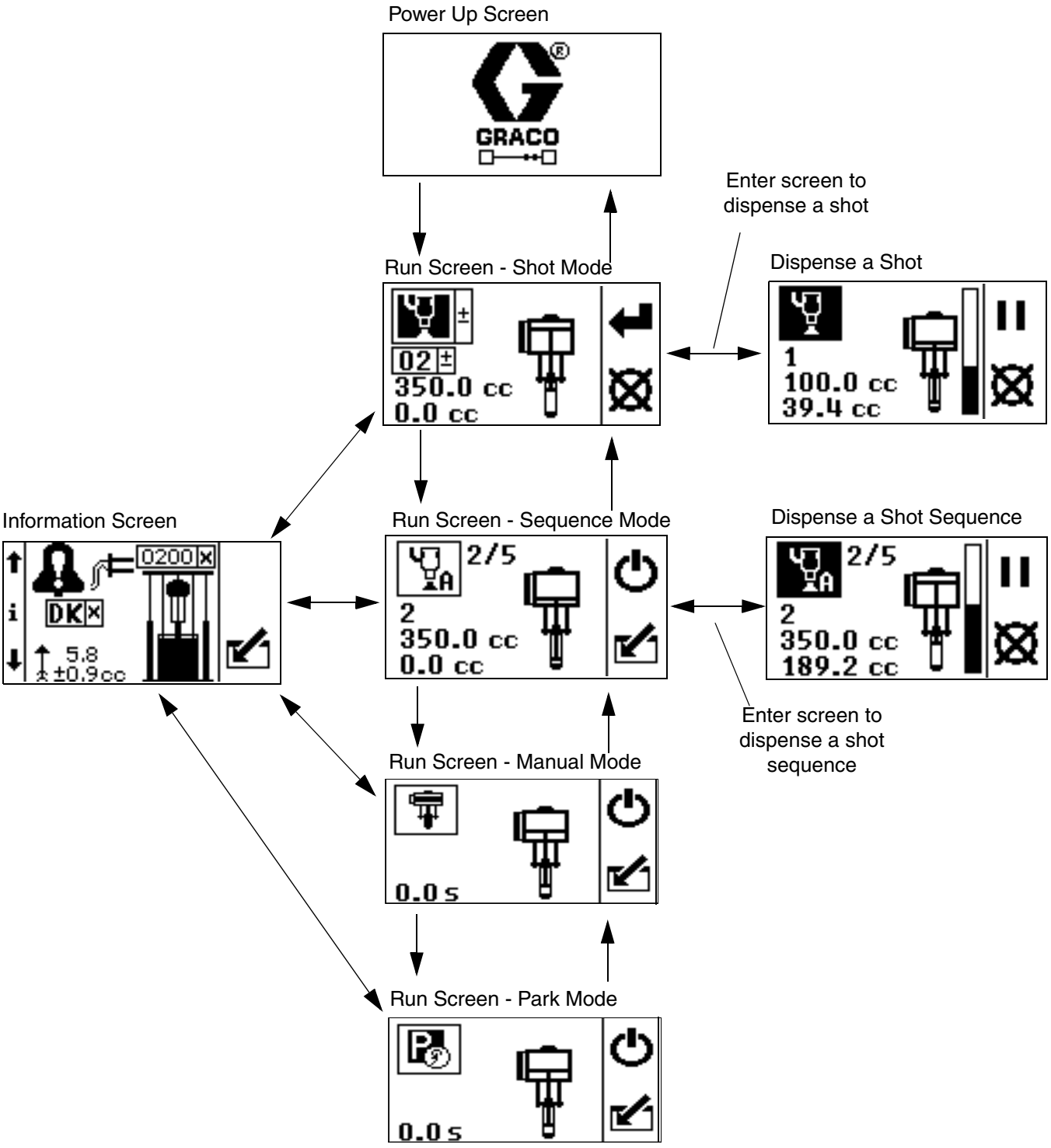
## Setup Mode Screen Structure

The following figure demonstrates the flow of the setup mode screens beginning with setup screen 1. For details on each setup screen, see - **Setup Mode Details** on page 94.



## Run Mode Screen Structure

There are only two run mode screens: run and information. However, there are four modes within the run screen: shot, sequence, manual and park. The following figure demonstrates the flow of the modes in the run screen beginning with power up screen 1. For details on each run mode, see - **Run Mode Details** on page 100.



# Grounding

The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit. To reduce the risk of static sparking, ground the pump, the object being dispensed to, and all other dispensing equipment used or located in the dispensing area. All electrical wiring must be done by a qualified electrician and comply with local codes and regulations.

**Supply System:** ground the supply system as instructed in the grounding section of the Supply Systems Operation manual.

**Pump:** use a ground wire and clamp. Connect the ground wire to the ground stud on the air motor. Connect ground clamp to a true earth ground.

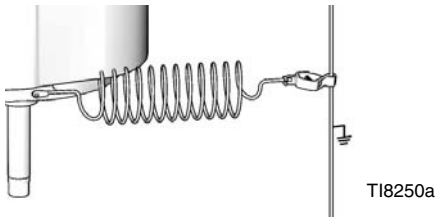



FIG. 8

**Air and fluid hoses:** use only electrically conductive hoses.

**Air compressor:** follow manufacturer's recommendations.

**Dispense valve:** ground through connection to a properly grounded fluid hose and pump. See dispense valve manual for instructions and guidelines.

**Fluid supply container:** follow local code.

**Solvent pails used when flushing:** follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

FIG. 9

**To maintain grounding continuity when flushing or relieving pressure:** hold metal part of the dispense valve firmly to the side of a grounded metal pail, then trigger the valve.

# Installation

The procedures in this section are specific to each shot dispense kit. Follow only the installation instructions for your particular kit.

For supply system or pump assembly installation instructions, refer to the Supply Systems Operation manual or your pump packages instructions-parts manual.

## Location

**NOTE:** SmartWare Shot Dispense kits are not approved for use in explosive atmospheres.

Follow the location guidelines and instructions provided in the Supply Systems Operation manual or your pump packages instructions-parts manual before installing the shot dispense kit.

## Install Kits 262370 and 262372

1. Close both shutoff valves on the air control panel.

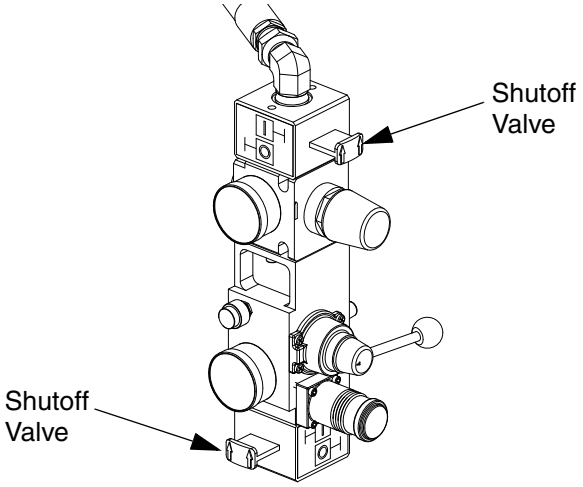



**FIG. 10: Close Shutoff Valves**

2. Install the power supply bracket (33) to the ram post using four screws (29) and lock washers (28).

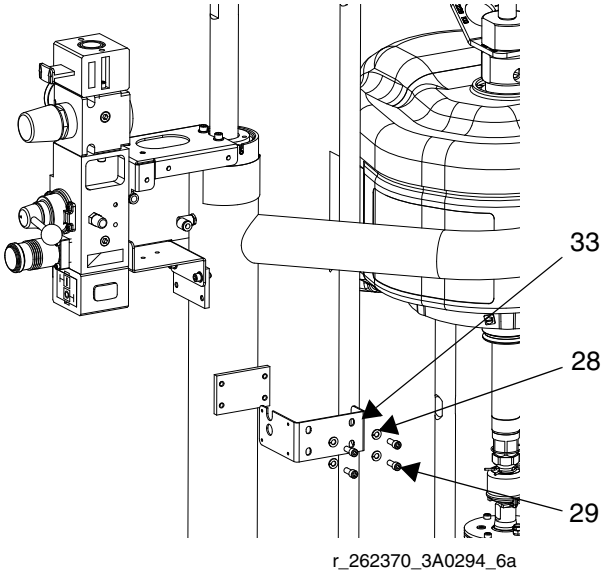



**FIG. 11: Install Power Supply Bracket**

3. Install the electronics subassembly (1) to the side of the power supply bracket using four screws (34). Also secure the bracket to the bottom of the air control bracket using two screws (29) and two lock washers (28).

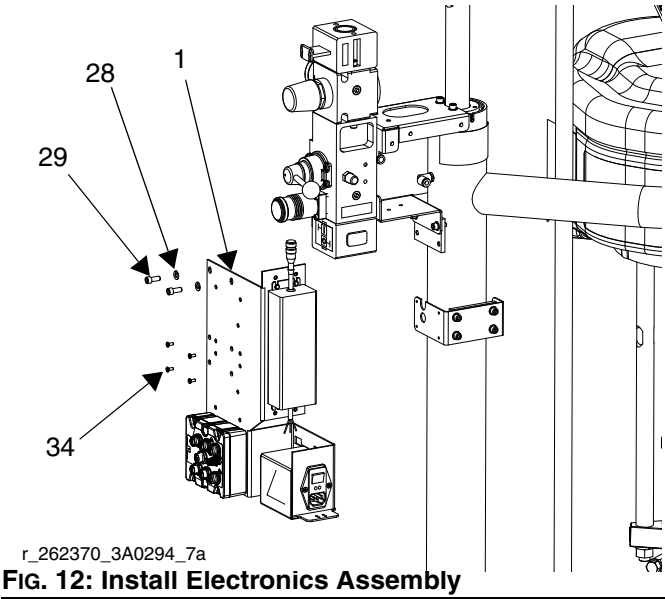



**FIG. 12: Install Electronics Assembly**

4. Install the light tower bracket (31) to the top air controls bracket using three screws (29) and lock washers (28).

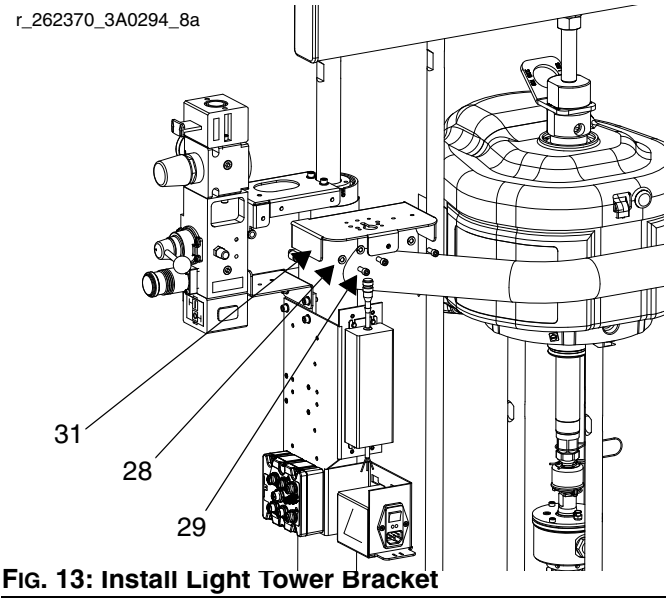



**FIG. 13: Install Light Tower Bracket**

5. Loosen two screws on the top air controls bracket. Install the display module bracket (2) using two screws (29) and lock washers (28) to secure it to the air controls bracket.

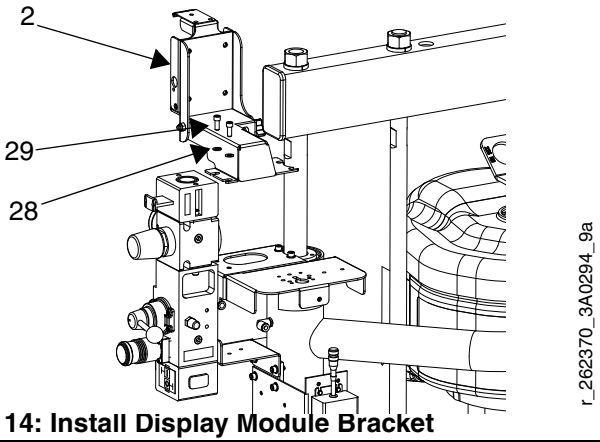



**FIG. 14: Install Display Module Bracket**

6. Install the air valve subassembly (3).

   a. Use two wrenches to remove the air hose, elbow fitting, and pressure gauge from the air controls.

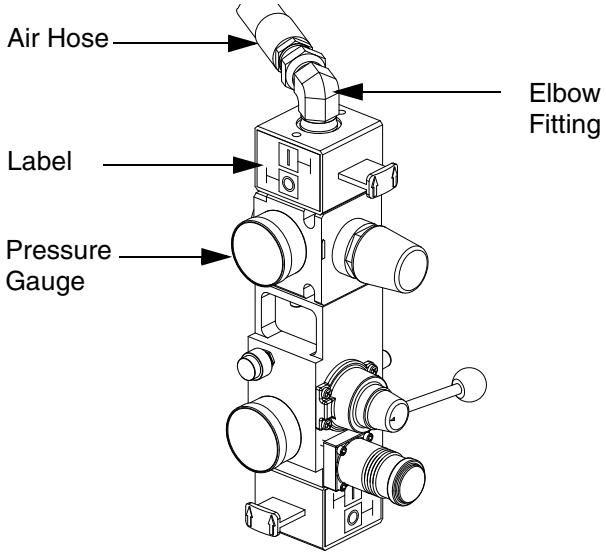



**FIG. 15: Air Control Assembly**

   b. Remove the air motor slider valve label. See FIG. 15.

c. Loosely install the air valve assembly (3). Grease the o-ring included with the air valve assembly. Install the o-ring and then finish installing the air valve assembly. Secure with screw.

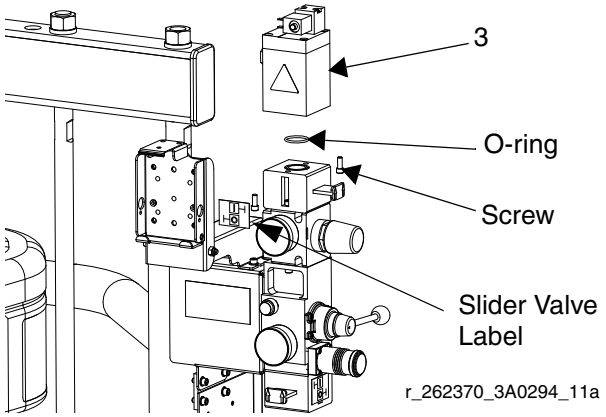



**FIG. 16: Install Air Valve Assembly**

d. Install the new air motor slider valve label that is included with the air valve assembly. See FIG. 15.

e. Coat the gauge fitting with PTFE tape, and then reinstall. Use a wrench to tighten. See FIG. 15.

f. Coat the swivel fitting (32) with PTFE tape. Install the fitting and air hose on the back of the new air valve assembly. Use two wrenches to tighten.

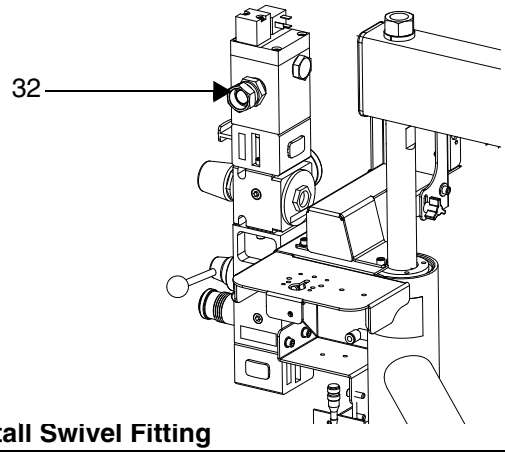



**FIG. 17: Install Swivel Fitting**

7. Install the linear sensor assembly (18) and the reed switch sensor (22).

   a. *D200 systems only:* disconnect the air motor. Loosen nut below crossbar. Use wrench to hold thread adapter in place and loosen threaded rod above crossbar with another wrench.

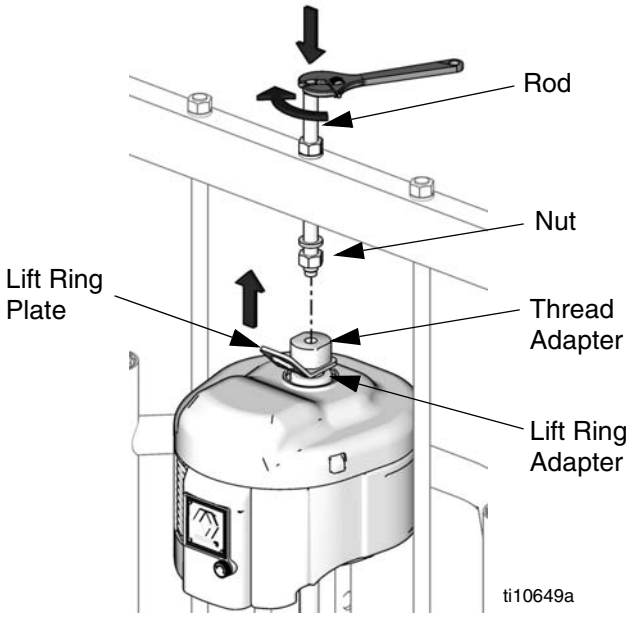



**FIG. 18: Disconnect Air Motor**

   b. Remove the air motor top cover using a flat head screwdriver.

**FIG. 19: Remove Air Motor Cover**

c. Use a wrench to remove the air motor lift ring. Then remove the lift ring adapter and both o-rings. Discard the adapter and both o-rings.

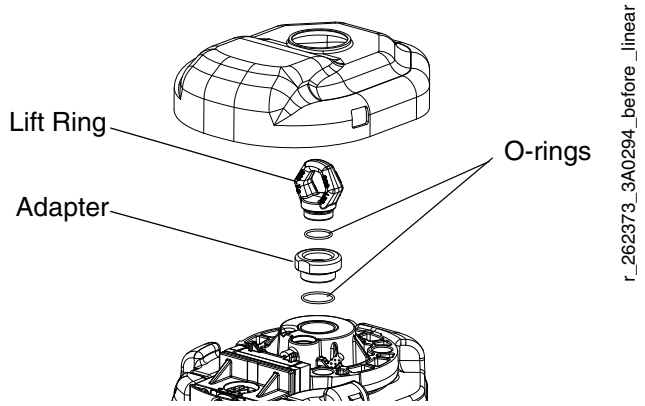



**FIG. 20: Remove Lift Ring Adapter and O-rings**

d. Place the linear sensor magnet (13) on the installation tool (27), and then insert the magnet down into the top of the motor shaft.

e. Apply the supplied adhesive to the linear sensor assembly (18) threads. Install the linear sensor; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 21.

f. Place the new o-ring (20) on the lift ring adapter (19), and apply the supplied adhesive to the threads. See FIG. 21.

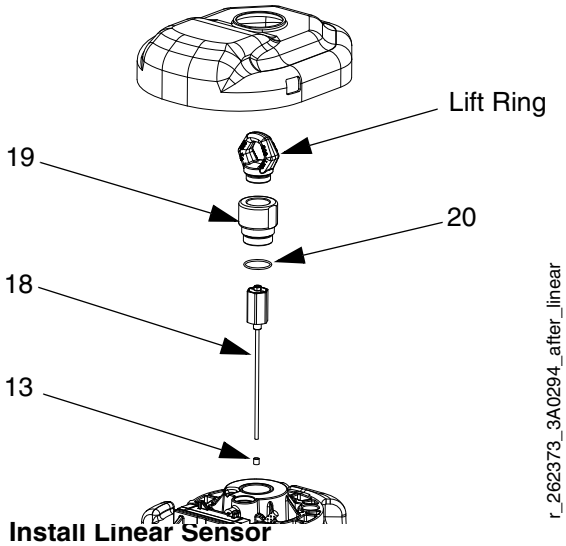



**FIG. 21: Install Linear Sensor**

g. Route the linear sensor cable through the lift ring adapter. Install the lift ring adapter; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 21.

h. Route the linear sensor cable through the hole on the lift ring adapter.

i. Apply the supplied adhesive to the lift ring threads. Install the lift ring; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 21.

j. Remove the screw on the valve cover to remove the cover. See FIG. 22.

k. Install the reed switch sensor (22). Secure with the 1 in. (25 mm) screw (24) and o-ring (23) provided. See FIG. 22.

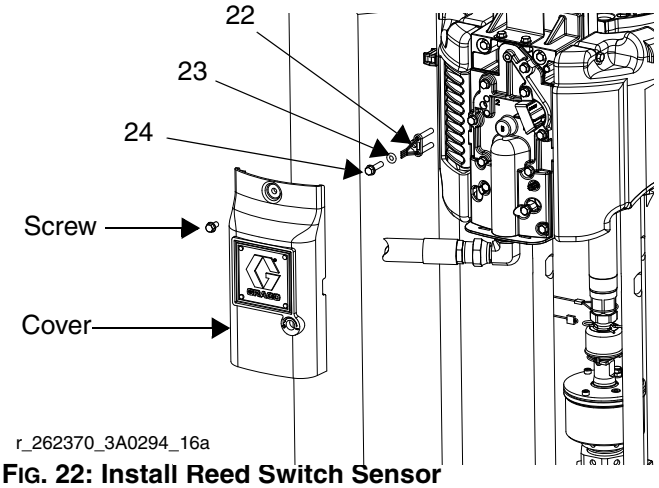



**FIG. 22: Install Reed Switch Sensor**

l. Connect the strain relief guide (26) to the reed switch sensor. Use a wrench to tighten the 1/4-20 x 1/2 in. screw (25) on the strain relief guide and to secure it to the top plate of the air motor.

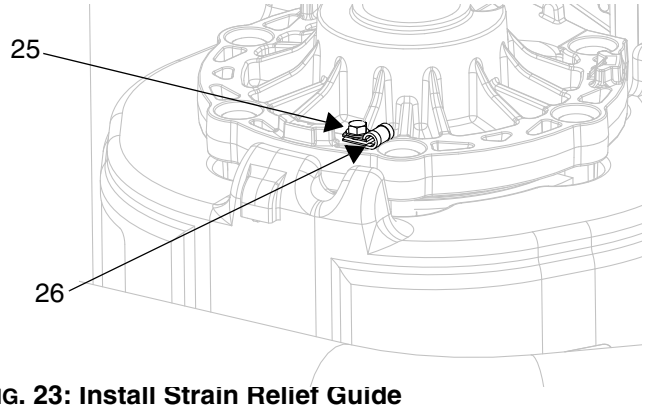



**FIG. 23: Install Strain Relief Guide**

m. Use a zip tie to secure the reed switch sensor cable.

n. Reinstall the valve cover, and tighten the nut. See FIG. 22.

o. Remove the plug in the air motor cover. Route the linear sensor cables through the hole in the back of the cover. Snap the air motor cover back into place.

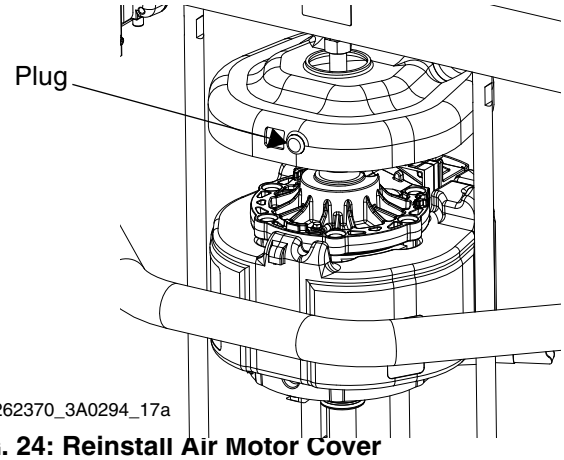



**FIG. 24: Reinstall Air Motor Cover**

p. *D200 systems only:* reconnect the air motor. Install threaded rod through center hole in the crossbar. Install lock washers and nuts onto threaded rod, both above and below crossbar. Use wrench to hold lift ring adapter and tighten threaded rod into lift ring adapter using another wrench. Tighten nut below crossbar to 25 ft-lb (34 N•m) maximum. Tighten nut above crossbar to lock motor in place.

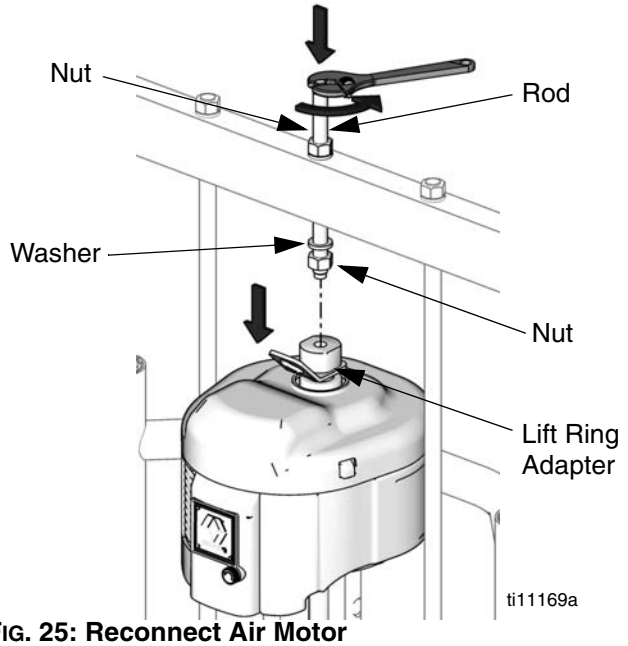



**FIG. 25: Reconnect Air Motor**

8. Install the pressure sensor on the pump bleed port. *D60 rams only:* If pump bleed valve is longer than the supplied, replace it with the supplied bleed valve (65).

   a. Use a wrench to remove the pressure valve.

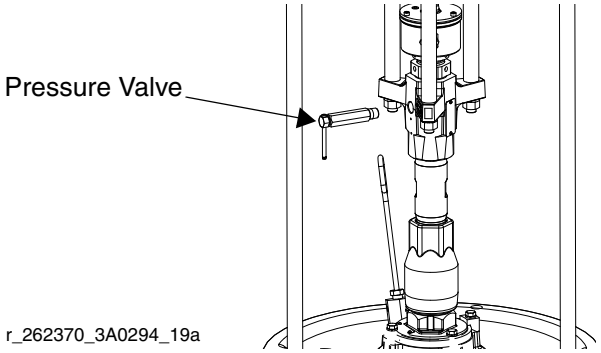



**FIG. 26: Remove Pressure Valve**

b. Apply the supplied sealant to the adapter (36), the manifold (37), and the pressure valve. Install all three in the order listed. See FIG. 27.

c. Disconnect sensor cable at PT1. Install the o-ring (41) and pressure sensor (38); use zip ties (35) to secure the cable to the ram and air hose.

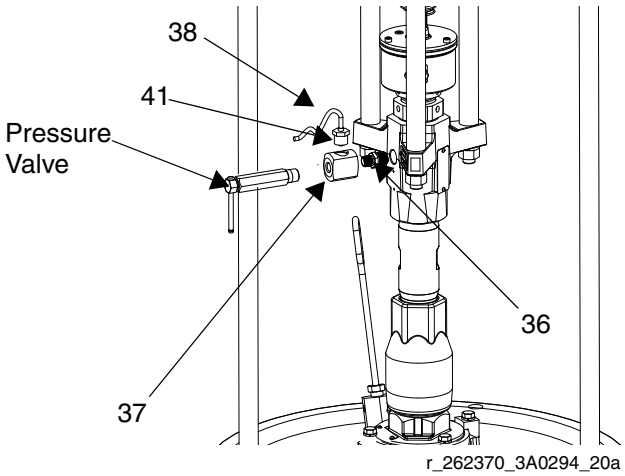



**FIG. 27: Install Pressure Sensor**

9. Install cables. Reference FIG. 29 for a diagram of cable connections and

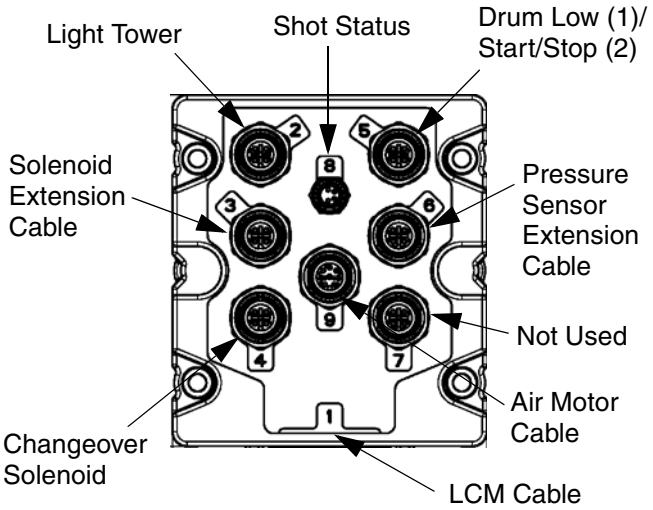
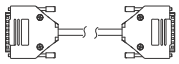
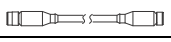
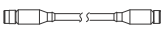
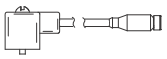
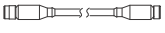



**FIG. 28: Breakout Module Connections**

| 262370 and 262372 Cable Identification | | | | | |
|---|---|---|---|---|---|
| **Description** | **Part** | **labels (relative to graphic)** | | **Length in. (mm)** | **Connectors** |
| Power | 121226 | PS1 | None | 16 (406.4) | |
| DB25 | 15T859 | 1(blue) | None | 120 (3048) |  |
| Pigtail | 15X619 | AM1 | LS1/RS1 | 17 (431.8) | |
| Motor | 15Y051 | 9(grey) | AM1 | 118 (2997.2) |  |
| Solenoid Extension | 122030 | 3(red) | Y1(yellow) | 20 (508) |  |
| Accessory Kit | | 5(grey) | Y2(orange) | 20 (508) | |
| Air Solenoid | 121806 | AV | 1(yellow) | 20 (508) |  |
| Fluid Solenoid | | FV | 2(yellow) | 20 (508) | |
| Pressure Sensor Extension | 16F562 | 6(blue) | PT1 | 80 (2032) |  |

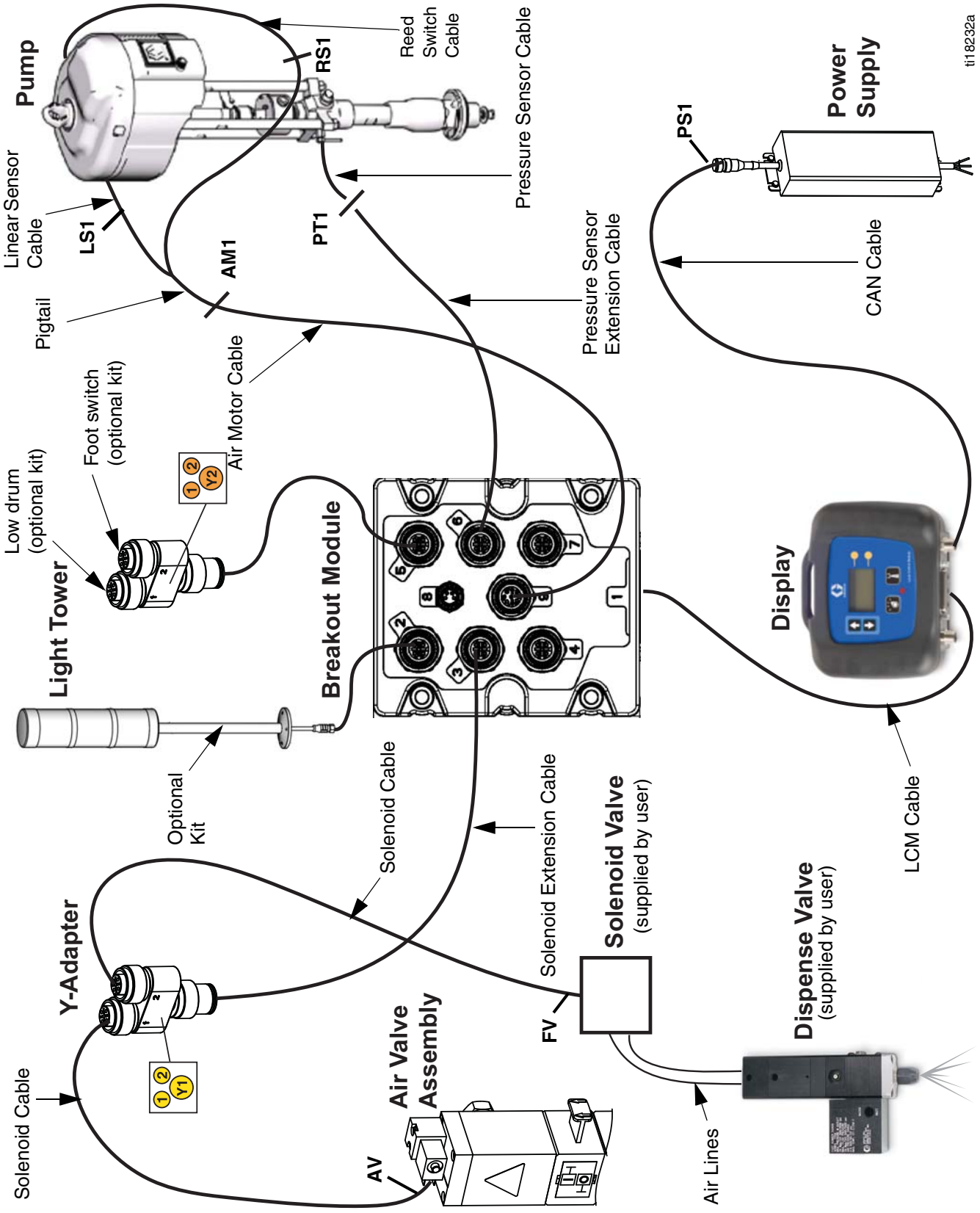



**FIG. 29: Cable Connections - D200S, D200, and D60 with Large NXT**

10. Secure cables to the air hose using zip ties. Tighten all zip ties and then cut off the excess.

11. Bundle the cables and zip tie them close to the electronics bracket (1) so that they will fit under the electronics subassembly cover (4).

12. Install the electronics subassembly cover. Install the back cover first and hand tighten the screws to secure. Then install the front cover; hand tighten the screws to secure.

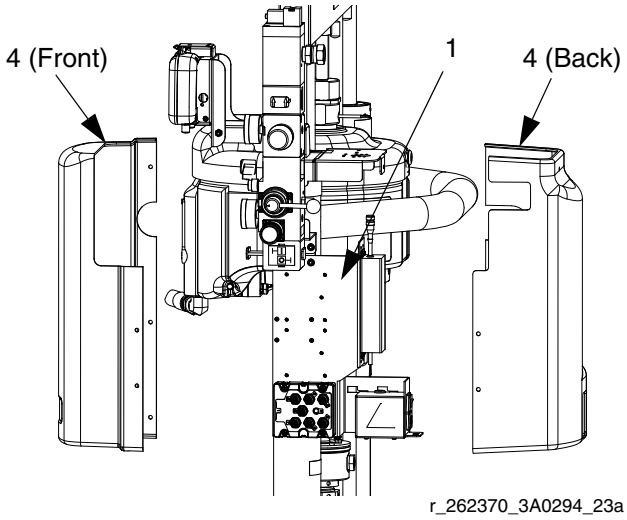



**FIG. 30: Install Covers**

13. Install the power supply cord (14).

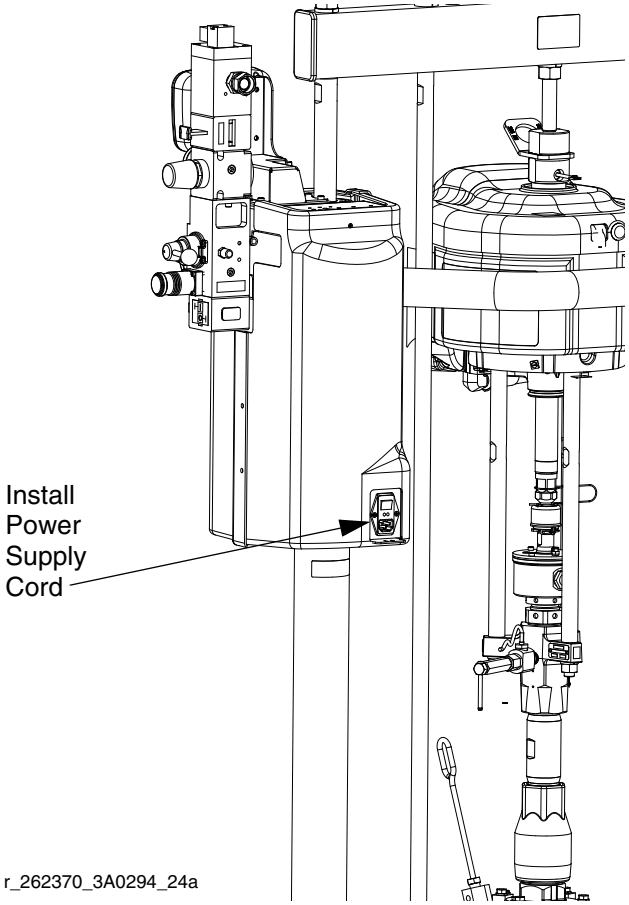



**FIG. 31: Install Power Supply Cord**

14. Open the air shutoff valves on the air control assembly.

# Install Kit 262371

1. Close both shutoff valves on the air control panel.

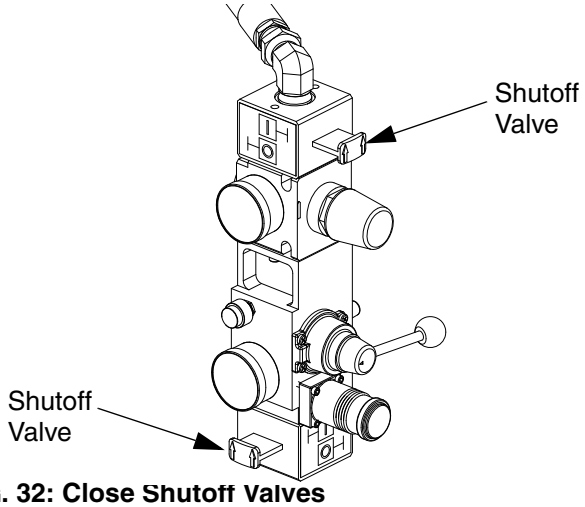



**FIG. 32: Close Shutoff Valves**

2. Install the power supply bracket (27) to the ram post using four screws (24) and lock washers (23).

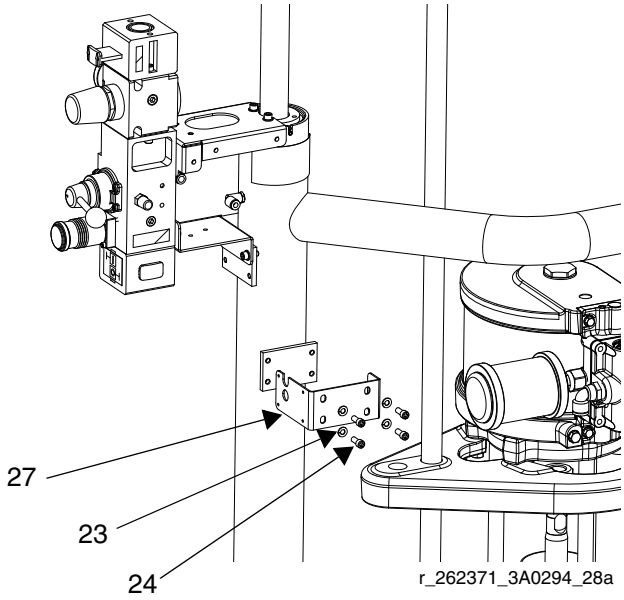



**FIG. 33: Install Power Supply Bracket**

3. Install the electronics subassembly (1) to the side of the power supply bracket using four screws (28). Also secure the bracket to the bottom of the air control bracket using two screws (24) and two lock washers (23).

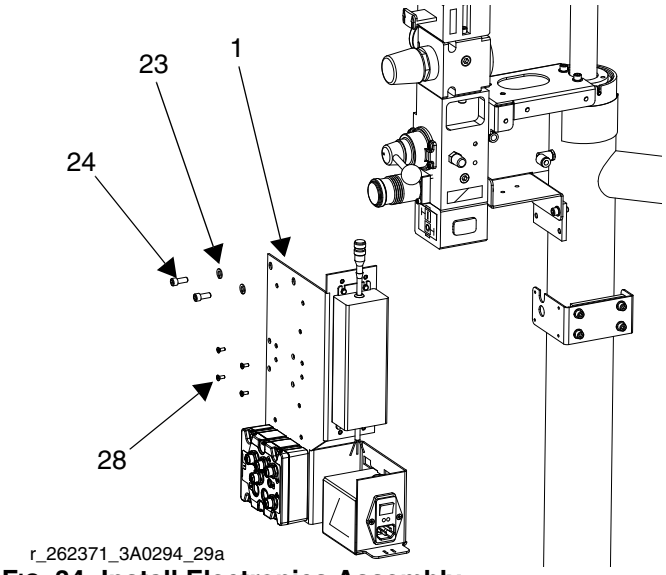



**FIG. 34: Install Electronics Assembly**

4. Install the light tower bracket (26) to the top air controls bracket using three screws (24) and lock washers (23).

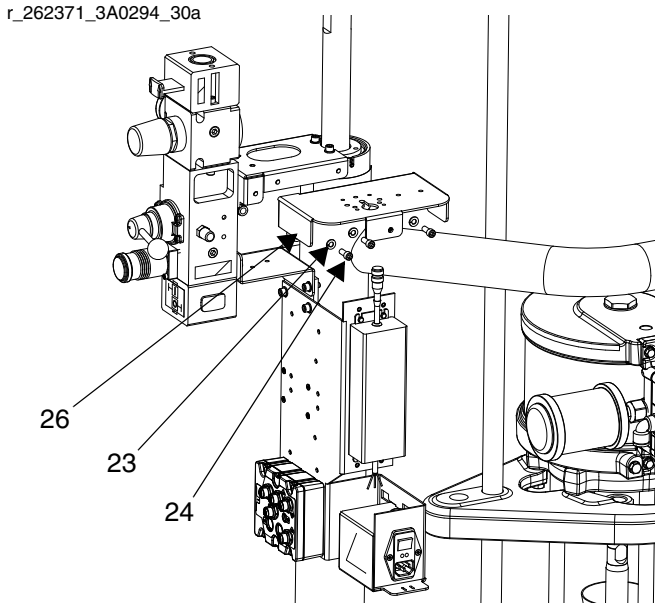



**FIG. 35: Install Light Tower Bracket**

5. Loosen two screws on the top air controls bracket. Install the display module bracket (2) using two screws (24) and lock washers (23) to secure it to the air controls bracket.

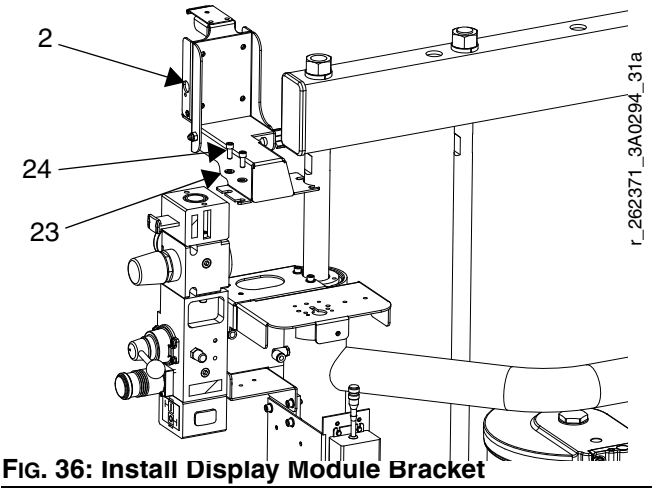



**FIG. 36: Install Display Module Bracket**

6. Install the air valve subassembly (3).

   a. Use two wrenches to remove the air hose, elbow fitting, and pressure gauge from the air controls.

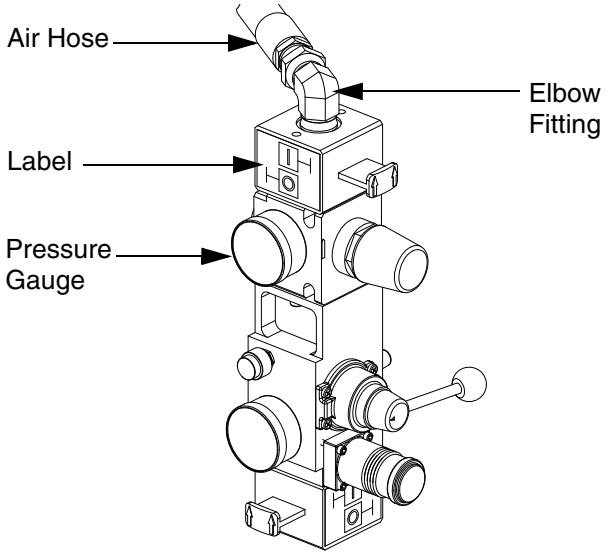



**FIG. 37: Air Control Assembly**

   b. Remove the air motor slider valve label. See FIG. 15.

   c. Loosely install the air valve assembly (3). Grease the o-ring included with the air valve assembly. Install the o-ring and then finish installing the air valve assembly. Secure with screw.

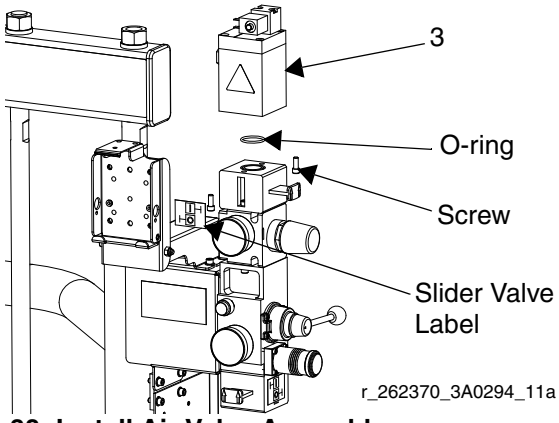



**FIG. 38: Install Air Valve Assembly**

   d. Install the new air motor slider valve label that is included with the air valve assembly. See FIG. 37.

   e. Coat the gauge fitting with PTFE tape, and then reinstall. Use a wrench to tighten. See FIG. 37.

   f. Coat the elbow fitting with PTFE tape. Reinstall the fitting and air hose on the back of the new air valve assembly. Use two wrenches to tighten.

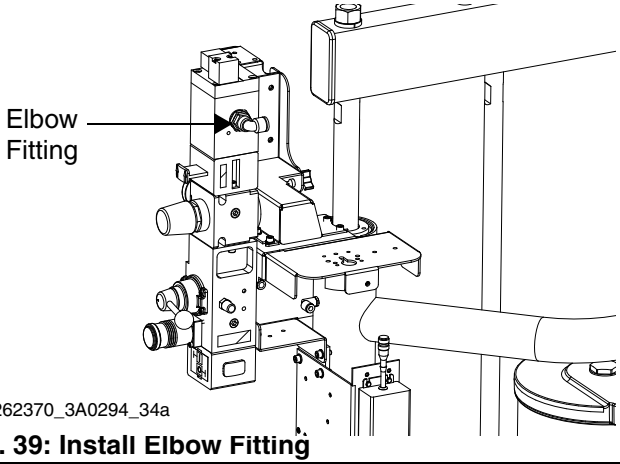



**FIG. 39: Install Elbow Fitting**

7. Snap the display (5) into the display bracket.

8. Install the linear sensor (17).

   a. Remove the lift ring or plug.

   b. Insert magnet and magnet holder into the top of the motor shaft using the magnet installation tool.

   c. Install the linear sensor assembly into the top plate of the air motor.

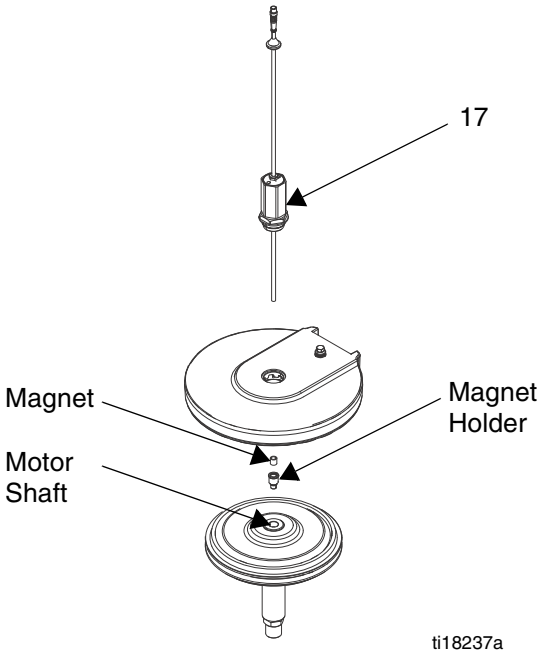



**FIG. 40: Install Linear Sensor**

9. Install the reed switch assembly (20).

   a. Remove the air line to the motor.

   b. Adjust the air fitting to make room for the reed switch (20).

   c. Install the reed switch (20) into the air valve as shown in FIG. 41, and secure with the screw (21).

**NOTE:** For air motor models M07xxx, M12xxx, and M18xxx, which have the large mufflers, remove the muffler before installing the reed switch. Reinstall the muffler after the reed switch in installed.

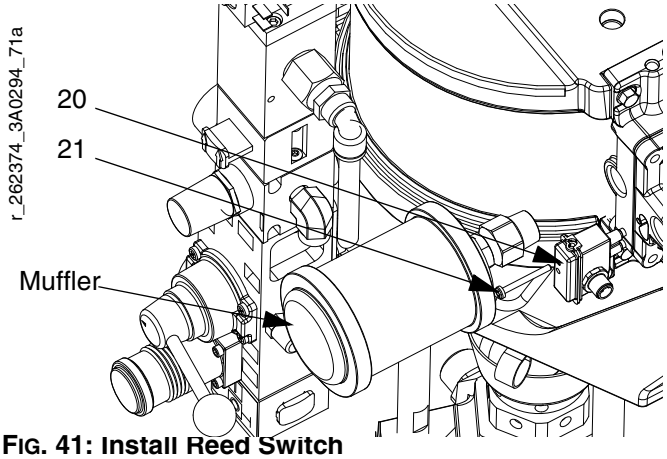



**FIG. 41: Install Reed Switch**

10. Install the pressure sensor on the pump bleed port.

    a. Use a wrench to remove the pressure valve.

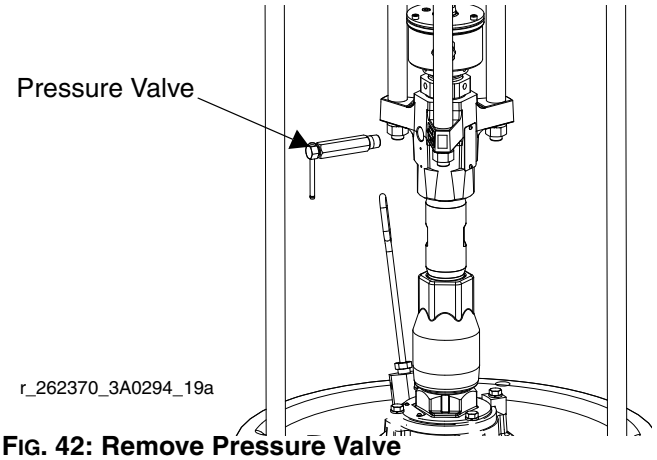



**FIG. 42: Remove Pressure Valve**

   b. Apply the supplied sealant to the adapter (30), the manifold (31), and the pressure valve. Install all three in the order listed. See FIG. 43.

   c. Disconnect pressure sensor at PT1.

d. Install the o-ring (33) and pressure sensor (32); use zip ties (35) to secure the cable to the ram and air hose.

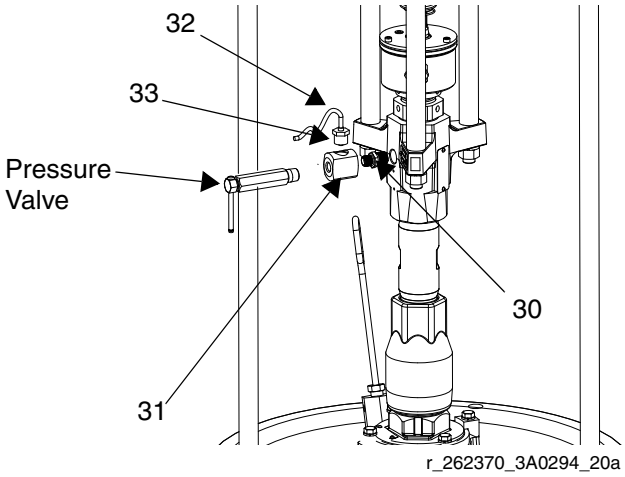



**FIG. 43: Install Pressure Sensor**

11. Install cables. Reference the table below and FIG. 46 for a diagram of cable connections.

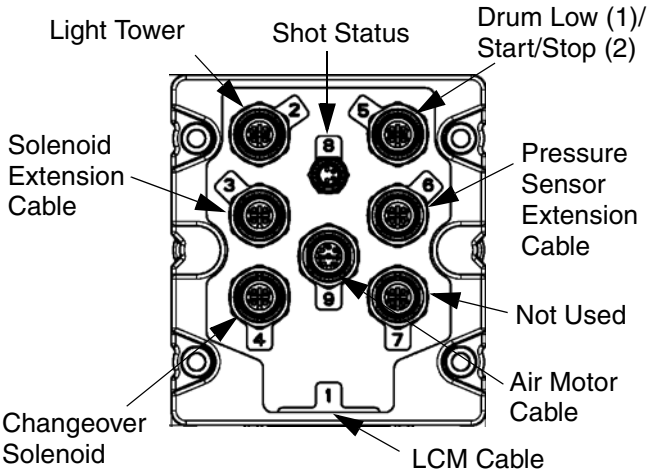



**FIG. 44: Breakout Module Connections**

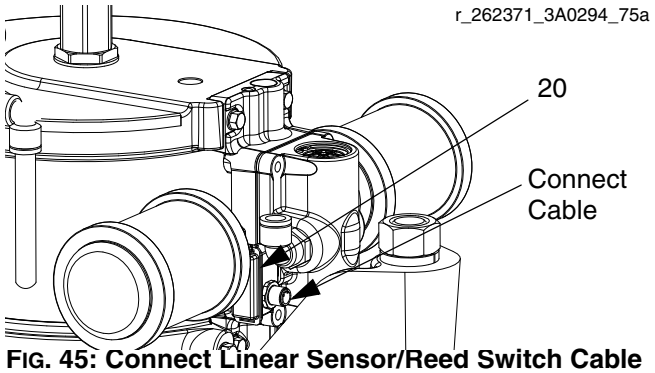



**FIG. 45: Connect Linear Sensor/Reed Switch Cable**

| 262371 Cable Identification | | | | | |
|---|---|---|---|---|---|
| **Description** | **Part** | **Labels (relative to graphic)** | | **Length in. (mm)** | **Connectors** |
| Power Cable | 121226 | PS1 | None | 16 | |
| DB25 | 15T859 | 1(blue) | None | 120 | |
| Pigtail | 16G589 | AM1 | LS1/RS1 | 52 | |
| Motor cable | 15Y051 | 9(grey) | AM1 | 118 | |
| Solenoid Extension | 122030 | 3(red) | Y1(yellow) | 20 | |
| Accessory Kit | | 5(grey) | Y2(orange) | | |
| Air Solenoid | 121806 | AV | 1(yellow) | 20 | |
| Fluid Solenoid | | FV | 2(yellow) | | |
| Pressure Sensor Extension | 16F562 | 6(blue) | PT1 | 80 | |

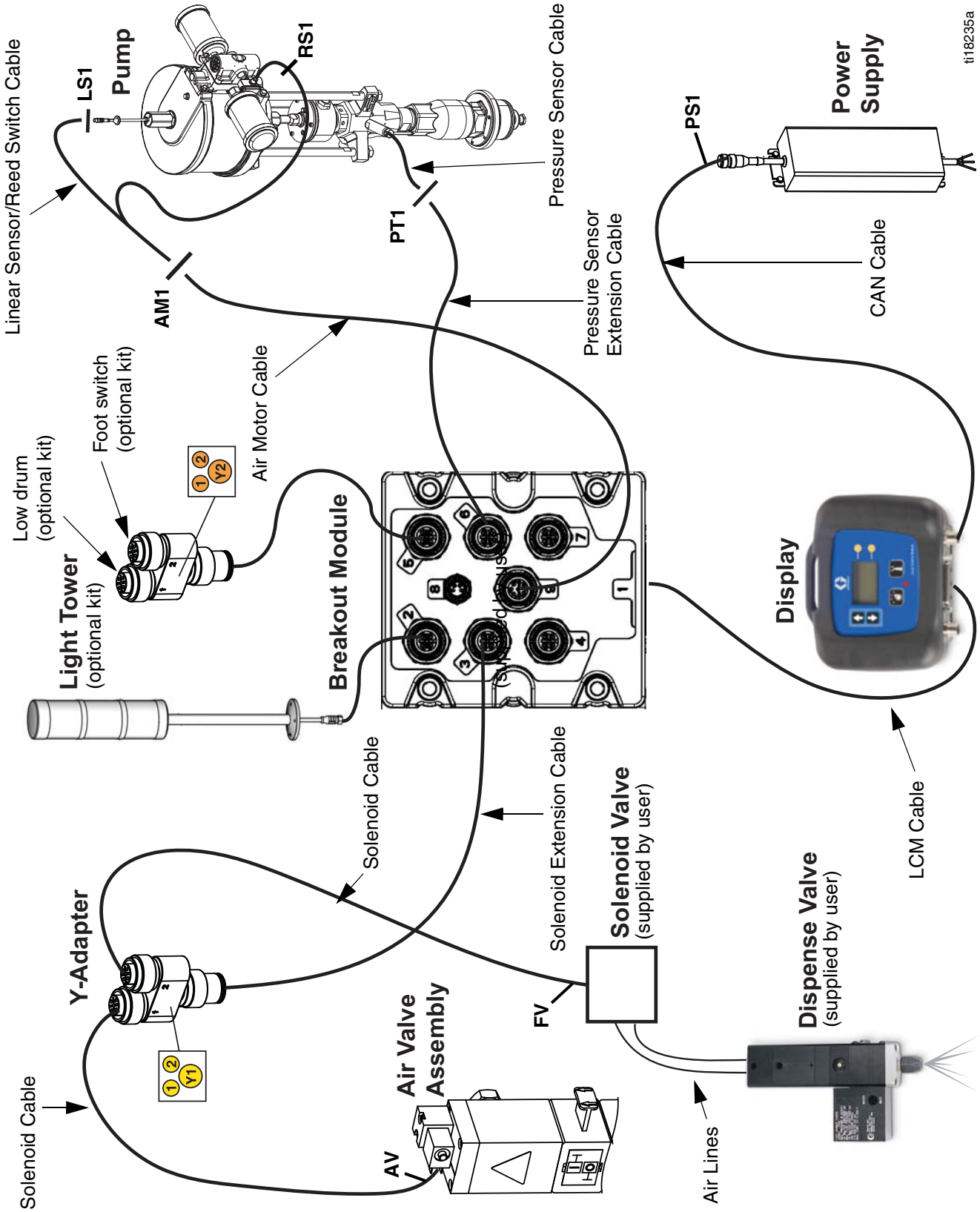



**FIG. 46: Cable Connections - D200 with Small NXT**

12. Secure cables to the air hose using zip ties. Tighten all zip ties and then cut off the excess.

13. Bundle the cables and zip tie them close to the electronics bracket (1) so that they will fit under the electronics subassembly cover (4).

14. Install the electronics subassembly cover. Install the back cover first and hand tighten the screws to secure. Then install the front cover; hand tighten the screws to secure.

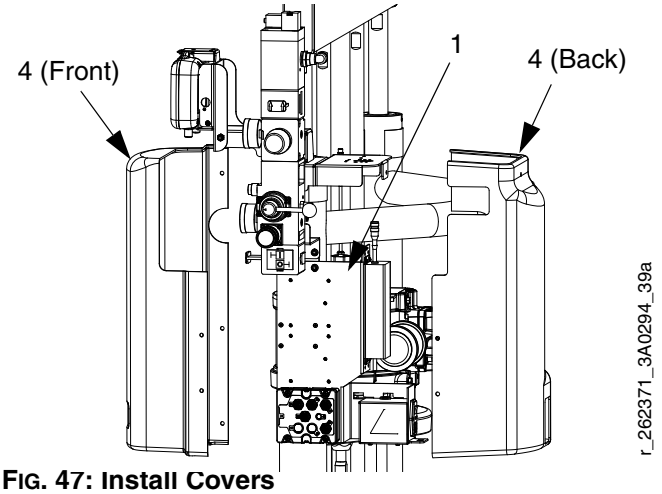



**FIG. 47: Install Covers**

15. Install the power supply cord (13).

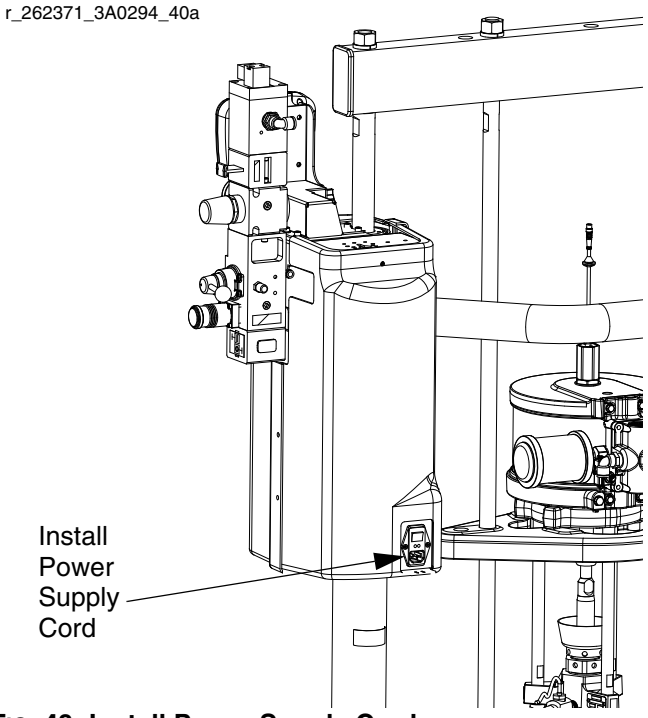



**FIG. 48: Install Power Supply Cord**

16. Open the air shutoff valves on the air control assembly.

# Install Kit 262373

1. Close both shutoff valves on the air control panel.

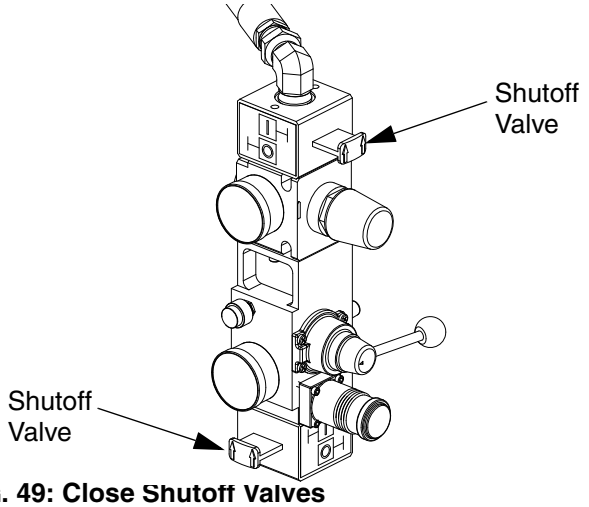



**FIG. 49: Close Shutoff Valves**

2. Install the electronics subassembly (1) to the back of the bracket on the ram post using four screws (29) and washers (28).

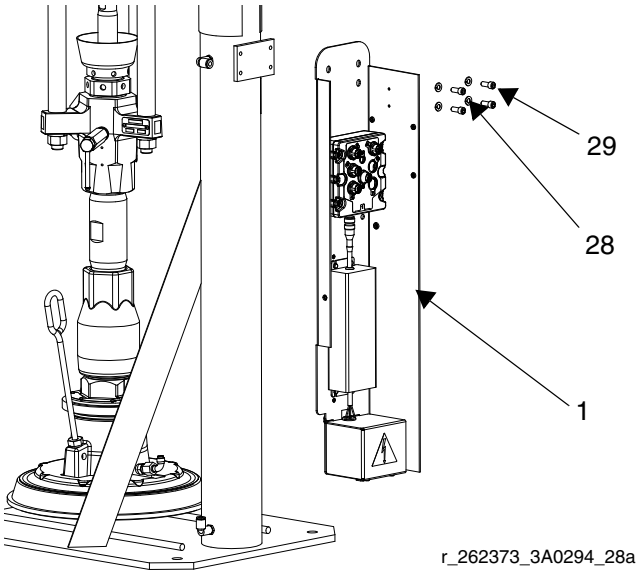



**FIG. 50: Install Electronics Assembly**

3. Install display bracket subassembly (2) to the bottom of the air motor using two screws (30) and two washers (31).

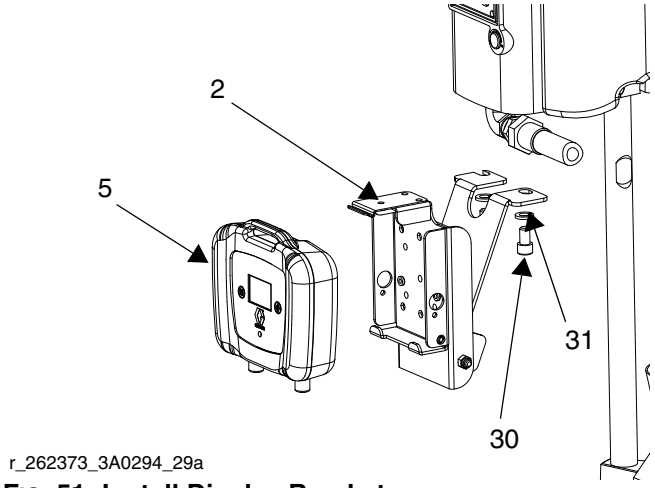



**FIG. 51: Install Display Bracket**

4. Install the air valve subassembly (3).
   a. Use two wrenches to remove the air hose, elbow fitting, and pressure gauge from the air controls.

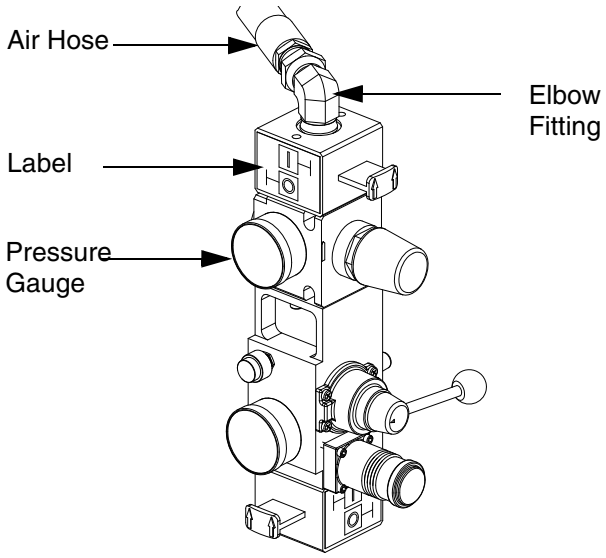



**FIG. 52: Air Controls**

   b. Remove the air motor slider valve label.

c. Loosely install the air valve assembly (3). Grease the o-ring included with the air valve assembly. Install the o-ring and then finish installing the air valve assembly. Secure with the two screws that are included with the air valve assembly.

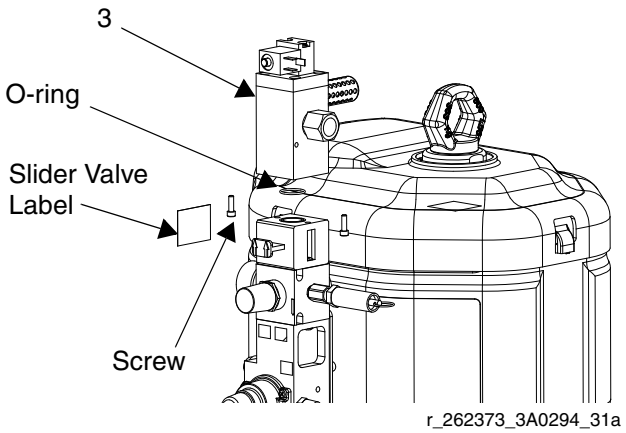



**FIG. 53: Install Air Valve Assembly**

d. Install the new air motor slider valve label that is included with the air valve assembly.

e. Coat the gauge fitting and elbow fitting with PTFE tape, and then reinstall. Use a wrench to tighten.

f. Install the fitting and air hose on the back of the new air valve assembly. Use two wrenches to tighten.

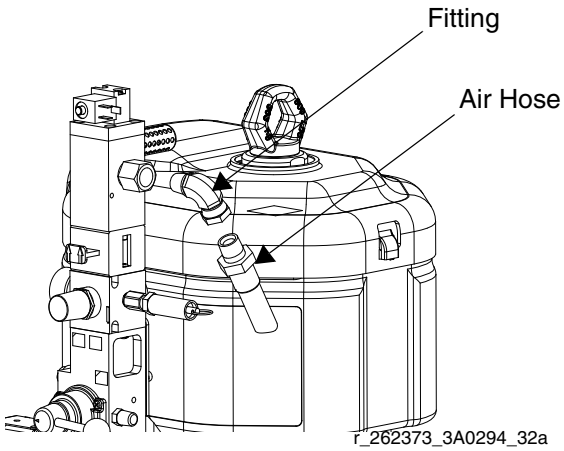



**FIG. 54: Install Fitting and Air Hose**

5. Snap the display (5) into the display bracket. See FIG. 51.

6. Install the linear sensor assembly (18) and the reed switch sensor (22).

   a. Remove the air motor top cover using a flat head screwdriver.

**FIG. 55: Remove Air Motor Cover**

   b. Use a wrench to remove the air motor lift ring. Then remove the lift ring adapter and both o-rings. Discard the adapter and both o-rings.

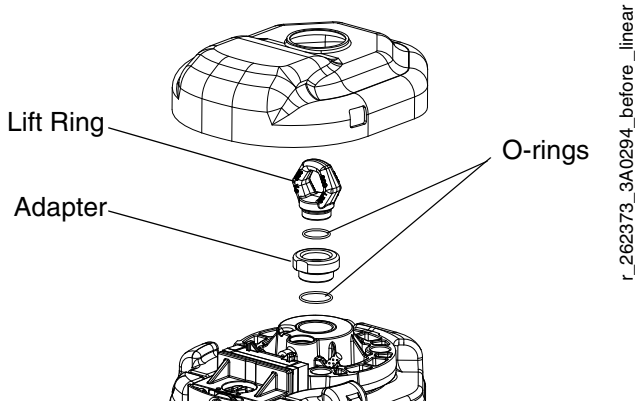



**FIG. 56: Remove Lift Ring Adapter and O-rings**

   c. Place the linear sensor magnet (13) on the installation tool (27), and then insert the magnet down into the top of the motor shaft.

   d. Apply the supplied adhesive to the linear sensor assembly (18) threads. Install the linear sensor; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 57.

e. Place the o-ring (20) on the lift ring adapter (19), and apply the supplied adhesive to the threads. See FIG. 57.

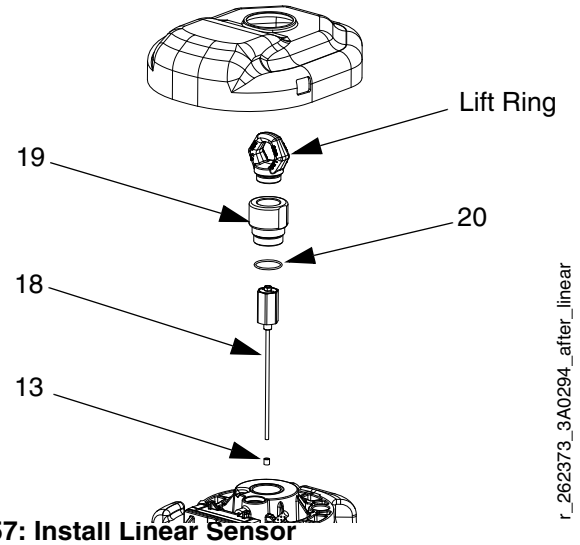



**FIG. 57: Install Linear Sensor**

f. Route the linear sensor cable through the lift ring adapter. Install the lift ring adapter; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 57.

g. Route the linear sensor cable through the hole on the lift ring adapter.

h. Apply the supplied adhesive to the lift ring threads. Install the lift ring; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 57.

i. Remove the screw on the valve cover to remove the cover. See FIG. 58.

j. Install the reed switch sensor (22). Secure with the 1 in. (25 mm) screw (24) and o-ring (23) provided. See FIG. 58.

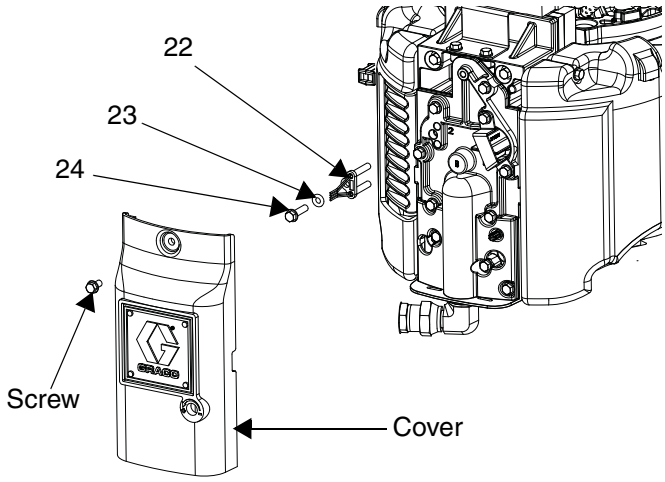



**FIG. 58: Install Reed Switch Sensor**

k. Connect the strain relief guide (26) to the reed switch sensor. Use a wrench to tighten the 1/2 in. screw (25) on the strain relief guide and to secure it to the top plate of the air motor.

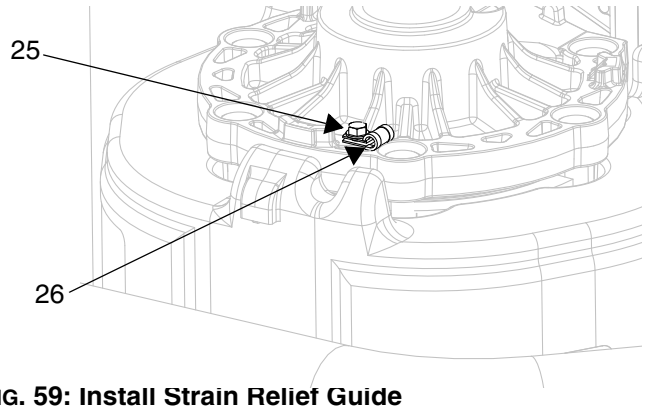



**FIG. 59: Install Strain Relief Guide**

l. Use a zip tie to secure the reed switch sensor cable.

m. Reinstall the valve cover, and tighten the nut. See FIG. 58.

n. Remove round plug and route the linear sensor cable through the opening in the back of the cover. Snap the air motor cover back into place.

7. Install the pressure sensor on the pump bleed port.

   a. Use a wrench to remove the pressure valve.

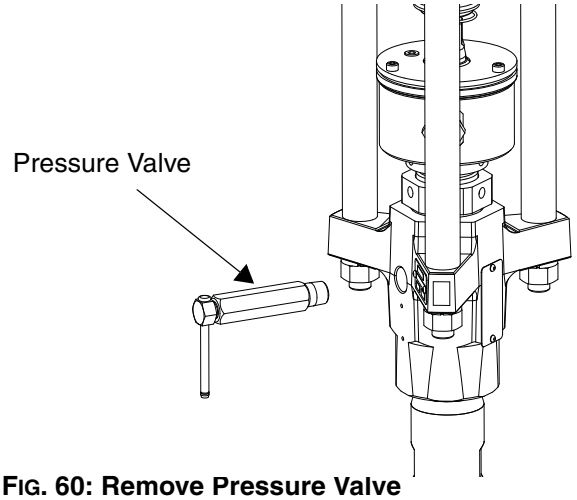



**FIG. 60: Remove Pressure Valve**

   b. Apply the supplied sealant to the adapter (33), the manifold (34), and the pressure valve. Install all three in the order listed. See FIG. 61.

   c. Disconnect pressure sensor at PT1.

   d. Install the o-ring (38) and pressure sensor (35); use zip ties (32) to secure the cable to the ram and air hose.

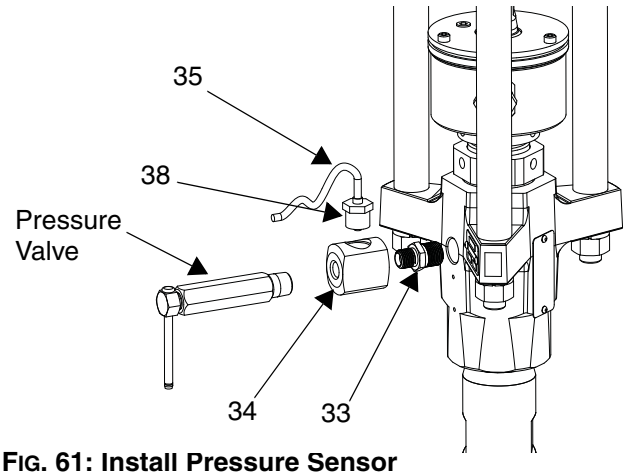



**FIG. 61: Install Pressure Sensor**

8. Install cables. Reference the cable identification table on the next page and FIG. 63 for a diagram of cable connections.

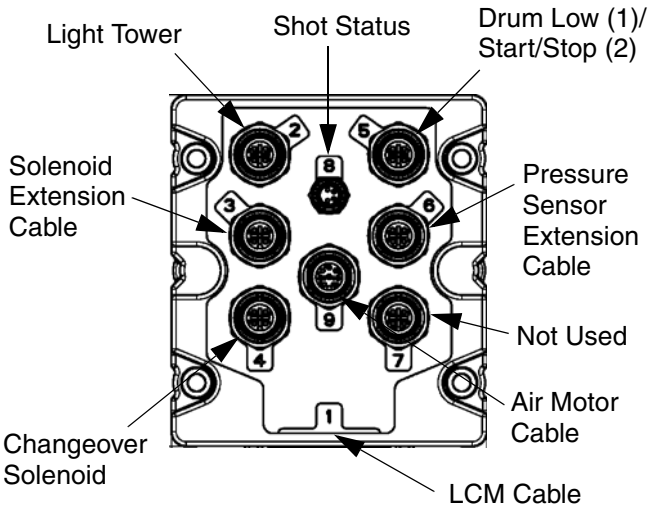
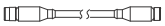
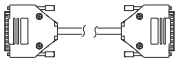
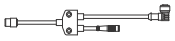
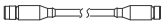
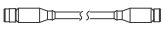
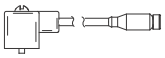
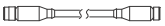



**FIG. 62: Breakout Module Connections**

| 262373 Cable Identification | | | | | |
|---|---|---|---|---|---|
| **Description** | **Part** | **Labels (relative to graphic)** | | **Length in. (mm)** | **Connectors** |
| Power Cable | 122487 | PS1 | None | 60 (1524) |  |
| DB25 | 15T859 | 1(blue) | None | 120 (3048) |  |
| Pigtail | 16G589 | AM1 | LS1/RS1 | 52 (1320.8) |  |
| Motor cable | 15Y051 | 9(grey) | AM1 | 118 (2997.2) |  |
| Air Solenoid Extension | 122030 | 1(yellow) | SX1 | 20 (508) |  |
| Solenoid Extension | | 3(red) | Y1(yellow) | | |
| Accessory Kit cable | | 5(grey) | Y2(orange) | | |
| Air Solenoid | 121806 | AV | SX1 | 20 (508) |  |
| Fluid Solenoid | | FV | 2(yellow) | | |
| Pressure Sensor Extension | 16F562 | 6(blue) | PT1 | 80 (2032) |  |

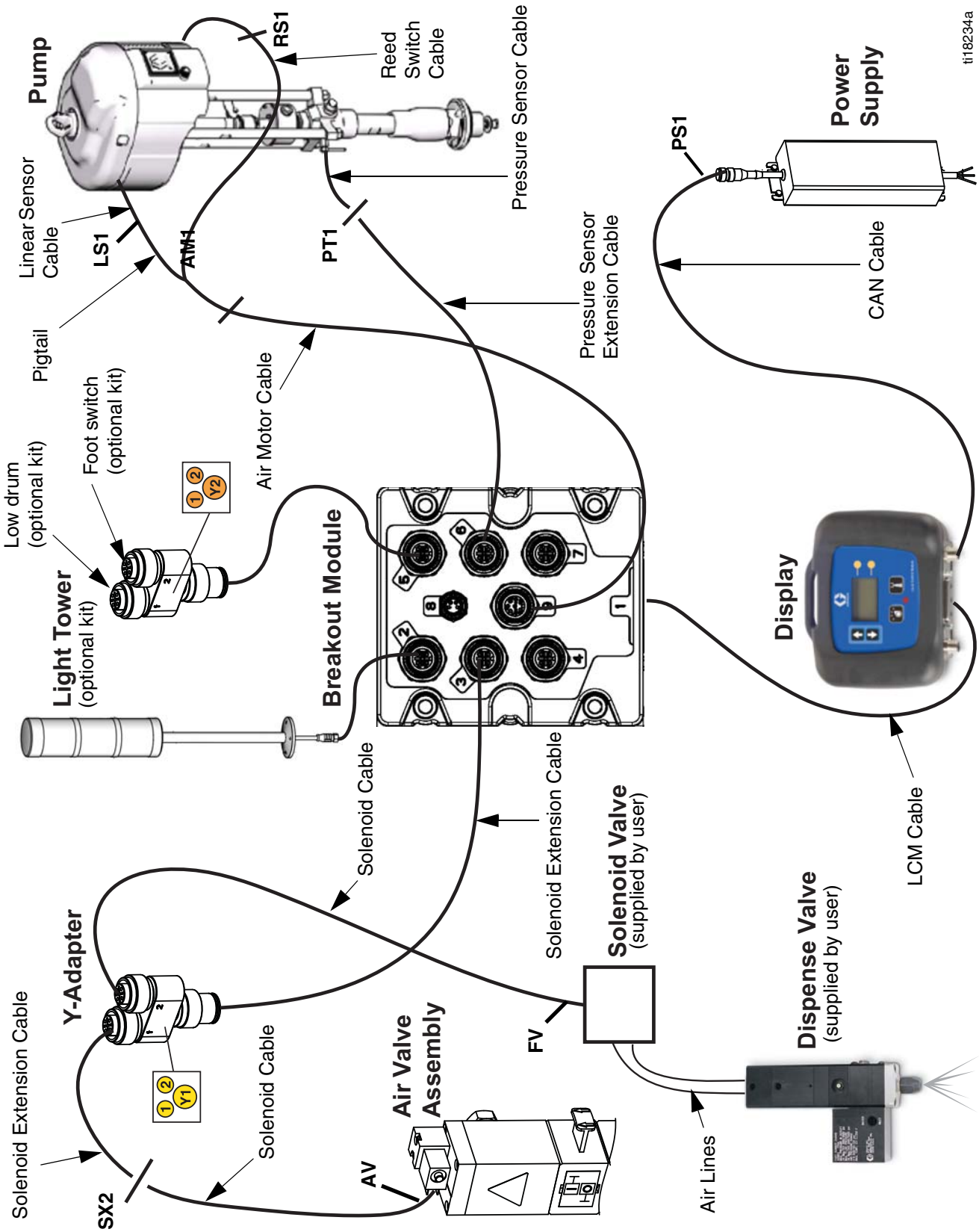



**FIG. 63: Cable Connections - S20 with Large NXT**

9. Secure cables to the air hose using zip ties. Tighten all zip ties and then cut off the excess.

10. Bundle the cables and zip tie them close to the electronics subassembly bracket (1) so that they will fit under the electronics subassembly cover (4).

11. Install the electronics subassembly cover; hand tighten the screws to secure.

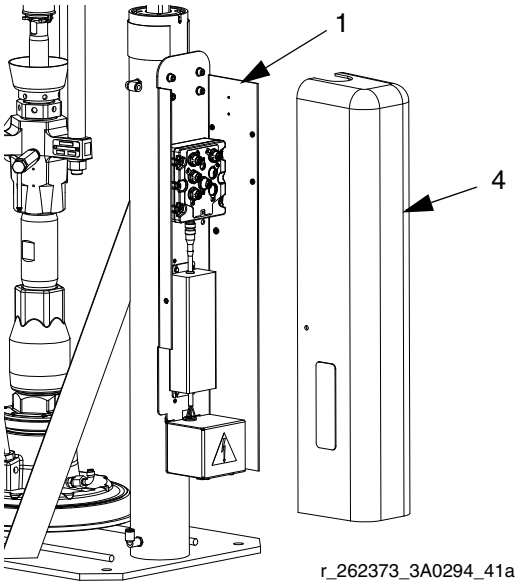



**FIG. 64: Install Electronics Cover**

12. Install the power supply cord (14).

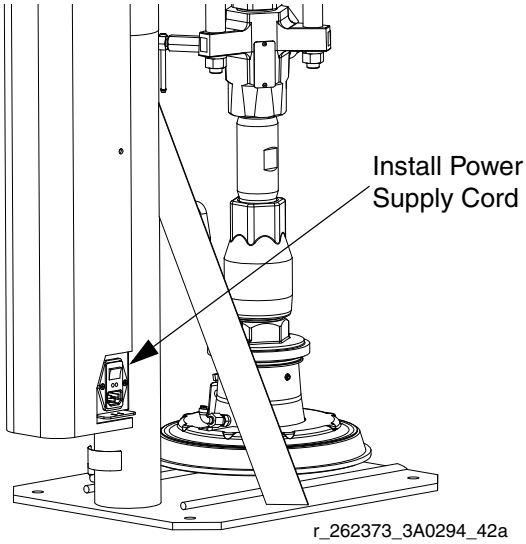



**FIG. 65: Install Power Supply Cord**

13. Open the air shutoff valves on the air control assembly.

# Install Kit 262374

1. Close both shutoff valves on the air control panel.

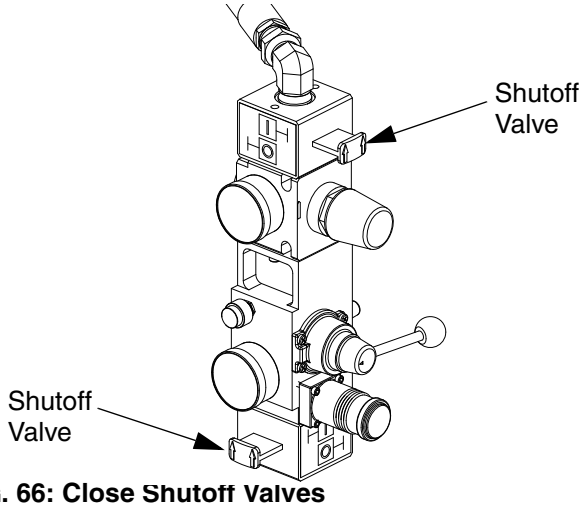



**FIG. 66: Close Shutoff Valves**

2. Install the electronics subassembly (1) to the back of the bracket on the ram post using four screws (23) and washers (22).

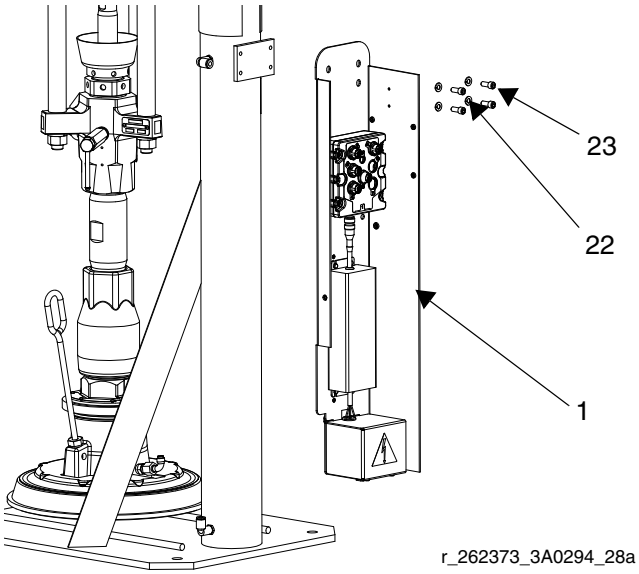



**FIG. 67: Install Electronics Assembly**

3. Install display bracket subassembly (2) to the bottom of the air motor using two screws (25) and two washers (24).

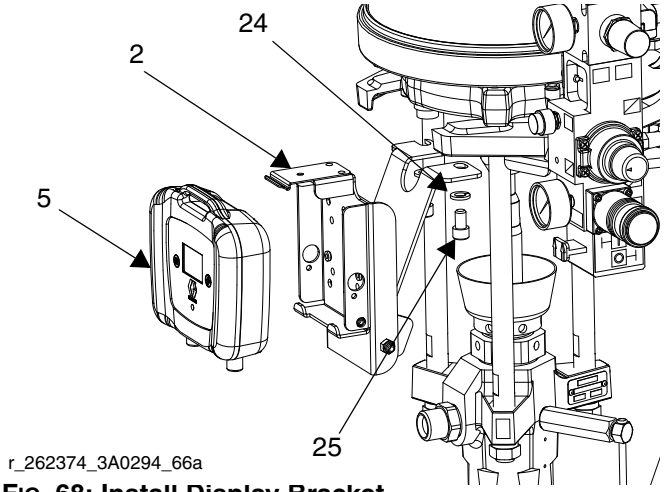



**FIG. 68: Install Display Bracket**

4. Install the air valve subassembly (3).
   a. Use two wrenches to remove the air hose, elbow fitting, and pressure gauge from the air controls.

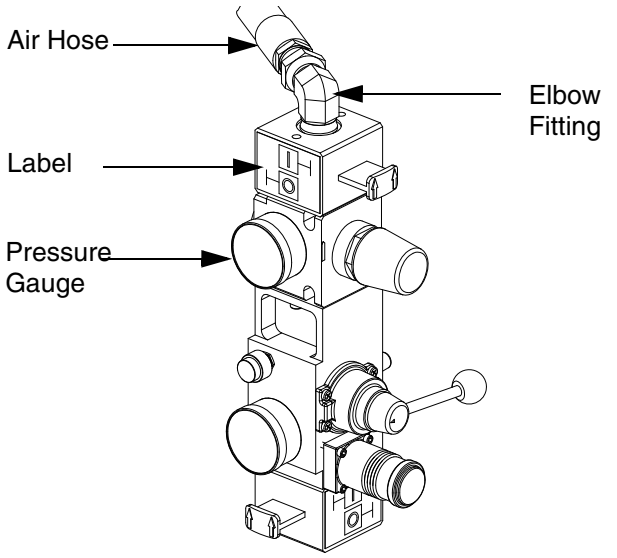



**FIG. 69: Air Valve**

   b. Remove the air motor slider valve label.

c. Loosely install the air valve assembly (3) Remove air pressure gauge if necessary. Grease the o-ring included with the air valve assembly. Install the o-ring and then finish installing the air valve assembly. Secure with the two screws that are included with the air valve assembly.

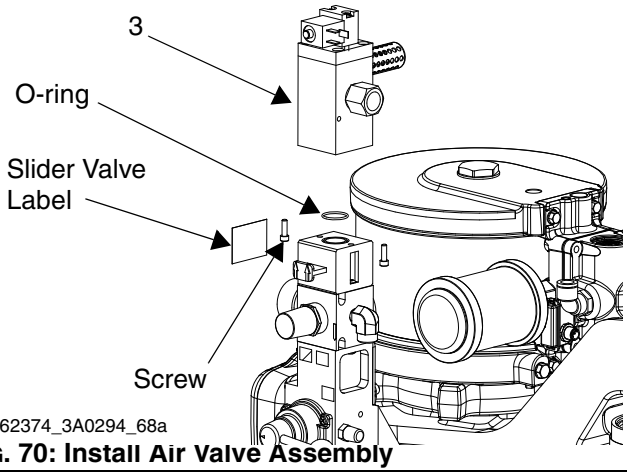



**FIG. 70: Install Air Valve Assembly**

d. Install the new air motor slider valve label that is included with the air valve assembly.

e. If removed, coat the gauge fitting and elbow fitting with PTFE tape, and then reinstall. Use a wrench to tighten.

f. Install the fitting and air hose on the back of the new air valve assembly. Use two wrenches to tighten.

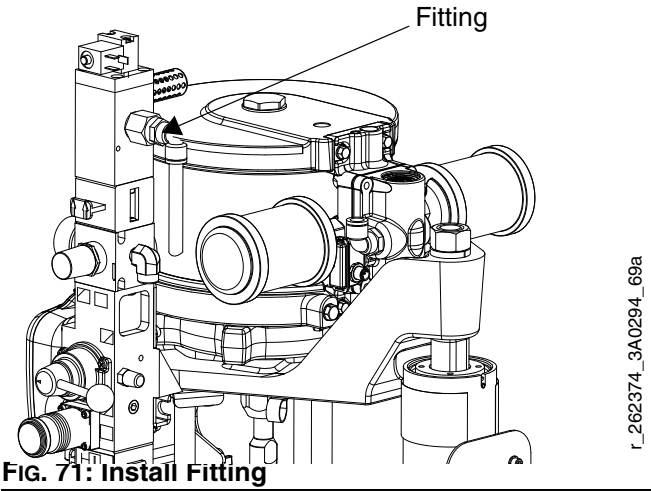



**FIG. 71: Install Fitting**

5. Install the linear sensor (17).

   a. Remove the lift ring or plug.

   b. Insert magnet holder and magnet into the top of the motor shaft using the magnet installation tool.

   c. Install the linear sensor assembly into the top plate of the air motor.

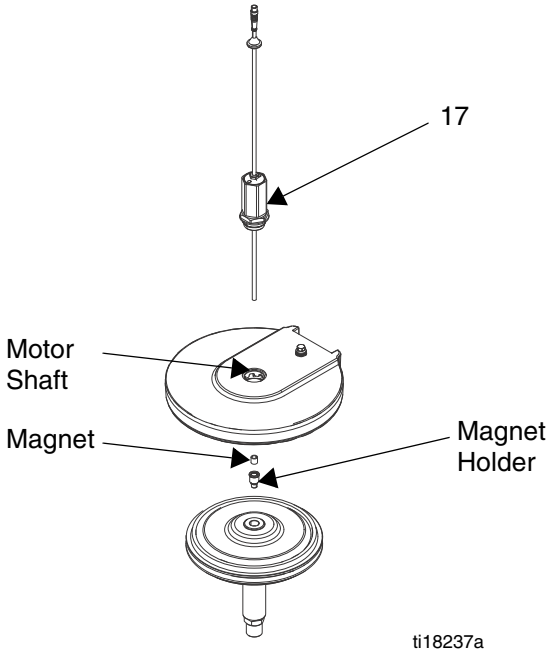



**FIG. 72: Install Linear Sensor**

6. Install the reed switch assembly (19).

   a. Remove the air line to the motor.

   b. Adjust the air fitting to make room for the reed switch (19).

   c. Install the reed switch into the air valve as shown in FIG. 41, and secure with the screw (20).

**NOTE:** For air motor models M07xxx, M12xxx, and M18xxx, which have the large mufflers, remove the muffler before installing the reed switch. Reinstall the muffler after the reed switch is installed.

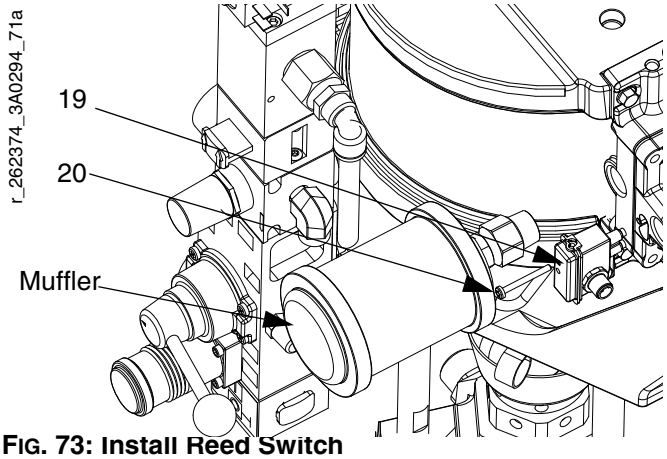



**FIG. 73: Install Reed Switch**

7. Install the pressure sensor on the pump bleed port.

   a. Use a wrench to remove the pressure valve.

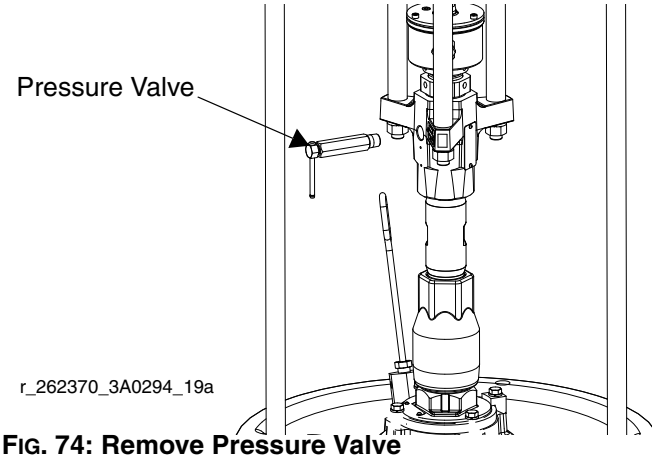



**FIG. 74: Remove Pressure Valve**

   b. Apply the supplied sealant to the adapter (27), the manifold (28), and the pressure valve. Install all three in the order listed. See FIG. 75.

   c. Disconnect pressure sensor at PT1.

   d. Install the o-ring (33) and pressure sensor (29); use zip ties (26) to secure the cable to the ram and air hose.

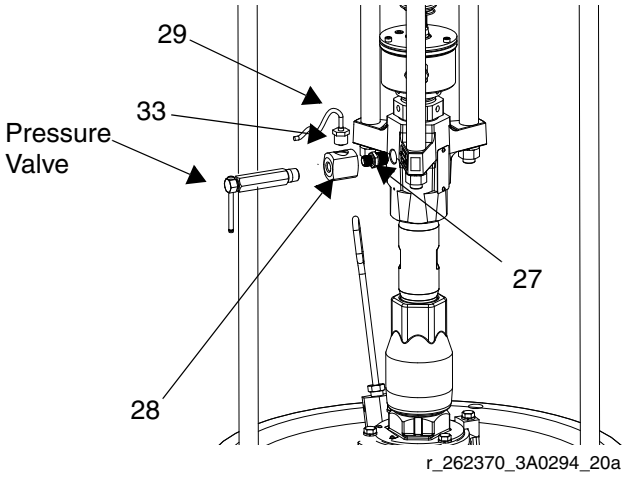



**FIG. 75: Install Pressure Sensor**

8. Install cables. Reference the cable identification table on the next page and FIG. 77 for a diagram of cable connections.

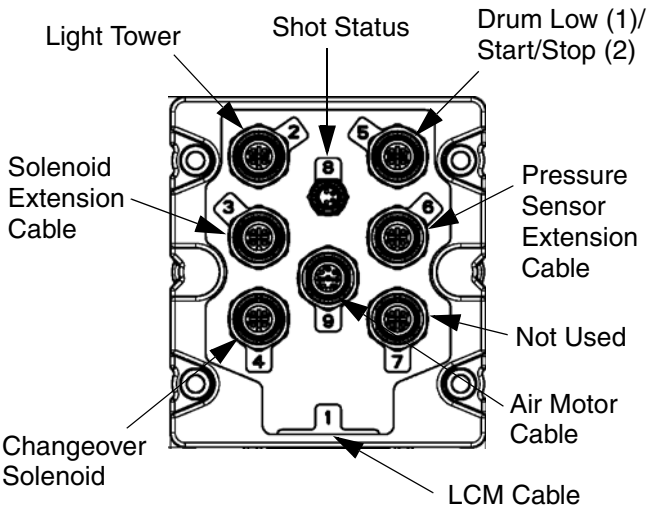
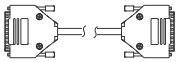
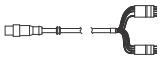
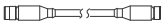
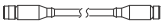



**FIG. 76: Breakout Module Connections**

| 262374 Cable Identification | | | | | |
|---|---|---|---|---|---|
| **Description** | **Part** | **Labels (relative to graphic)** | | **Length in. (mm)** | **Connectors** |
| Power Cable | 122487 | PS1 | None | 60 (1524) |  |
| DB25 | 15T859 | 1(blue) | None | 120 (3048) |  |
| Pigtail | 16G589 | AM1 | LS1/RS1 | 52(1320.8) |  |
| Motor cable | 15Y051 | 9(grey) | AM1 | 118 (2997.2) |  |
| Air Solenoid Extension | 122030 | 3(red) | Y1(yellow) | 20 (508) |  |
| Accessory Kit | | 5(grey) | Y2(orange) | | |
| Air Solenoid | 121806 | AV | SX1 | 20 (508) | |
| Fluid Solenoid | | FV | 2(yellow) | | |
| Pressure Sensor Extension | 16F562 | 6(blue) | PT1 | 80 (2032) |  |

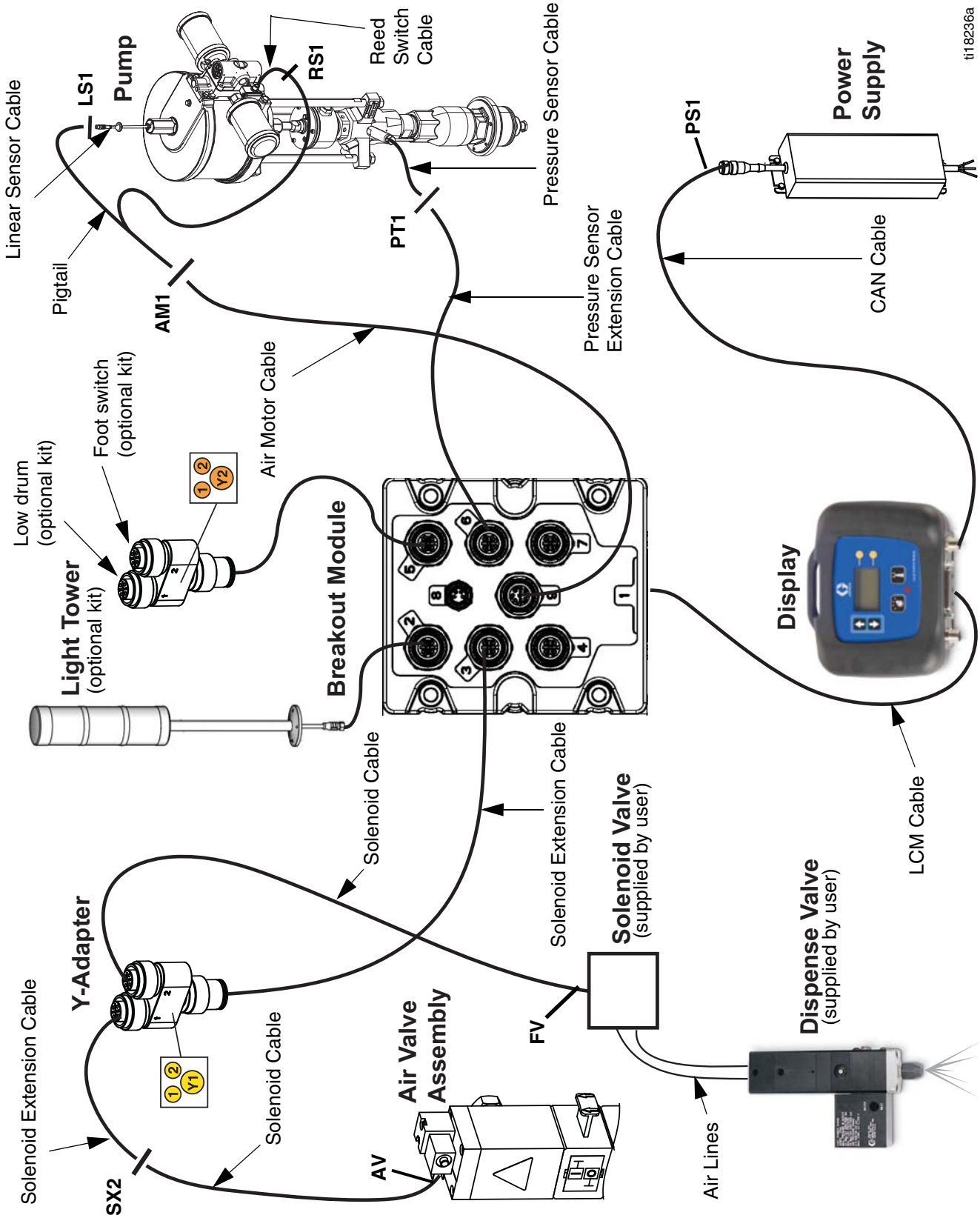



**FIG. 77: Cable Connections - S20 with Small NXT**

9. Route all cables out the top of the electrical enclosure. Make sure there is enough slack to extend ram to full height. Secure cables to the air hose using zip ties. Tighten all zip ties and then cut off the excess.

10. Bundle the excess cable length and zip tie them close to the electronics bracket (1) so that they will fit under the electronics subassembly cover (4).

11. Install the electronics subassembly cover. Install the back cover first and hand tighten the screws to secure. Then install the cover and hand tighten the screws to secure.

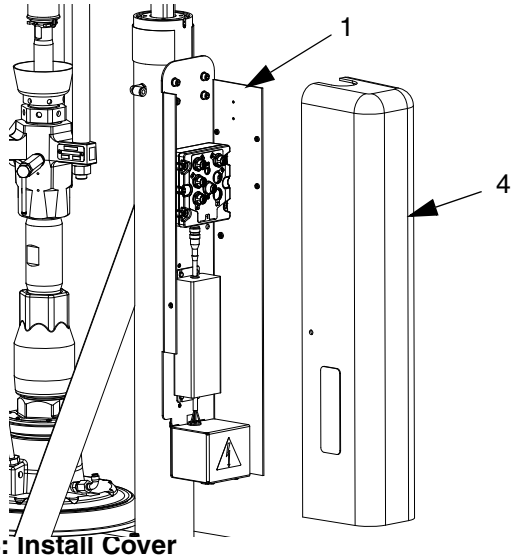



**FIG. 78: Install Cover**

12. Install the power supply cord (12).

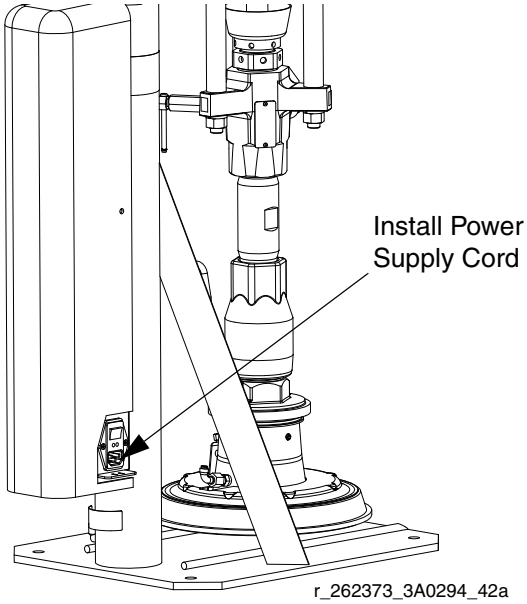



**FIG. 79: Install Power Supply Cord**

13. Open the air shutoff valves on the air control assembly.

# Install Kit 262375

1. Shut off the air supply to the system.

2. *Floor stand kit only:* Install the control mount bracket (39) to the pump using two screws (36), and washers (37 and 40).

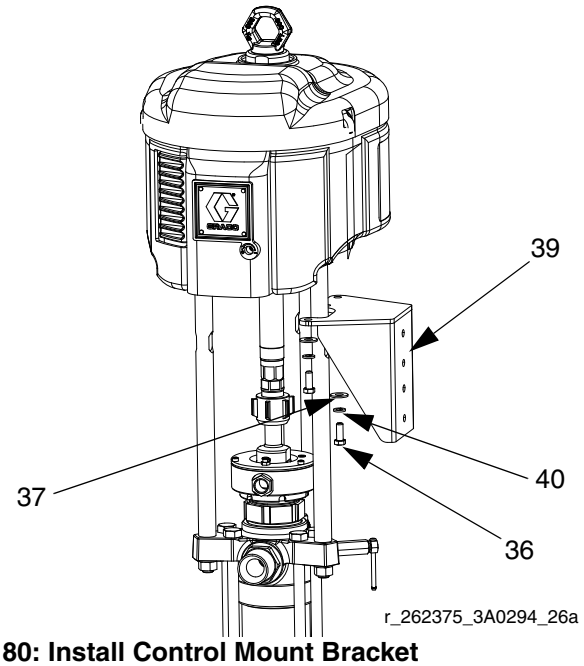



**FIG. 80: Install Control Mount Bracket**

3. Install the adapter bracket (35) to the wall mount bracket or the control mount bracket using two screws (36), washers (37), and nuts (38).

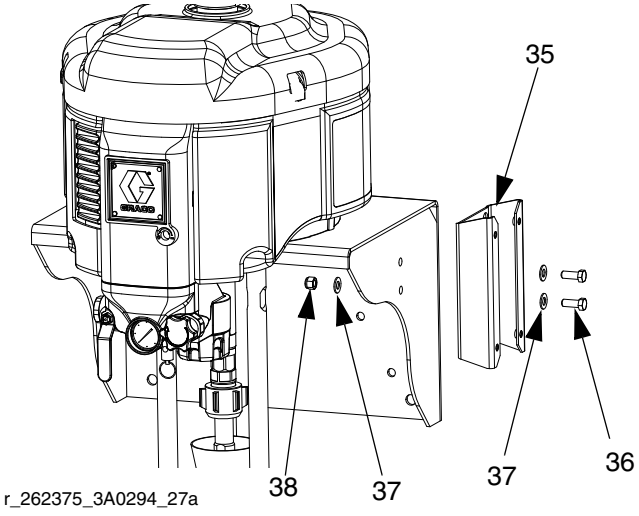



**FIG. 81: Install Adapter Bracket**

4. Install the electronics subassembly (1) to the side of the adapter bracket using four screws (30) and washers (29).

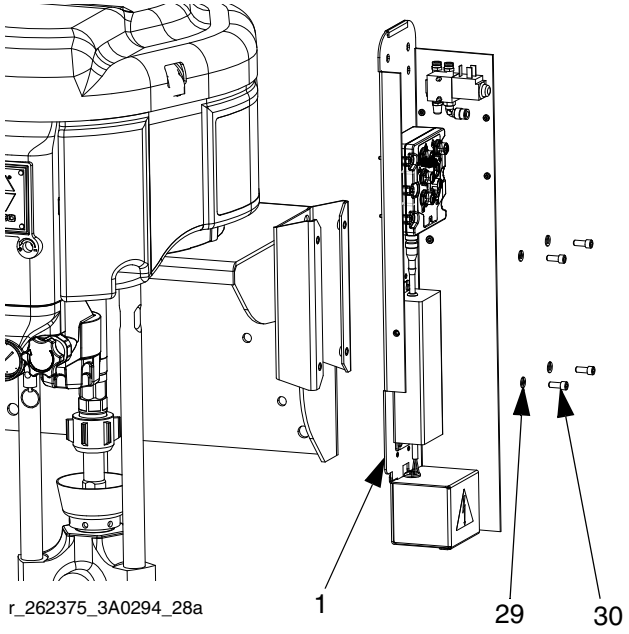



**FIG. 82: Install Electronics Assembly**

5. Install the display bracket (2) to the electronics subassembly using four screws (30) and washers (29).

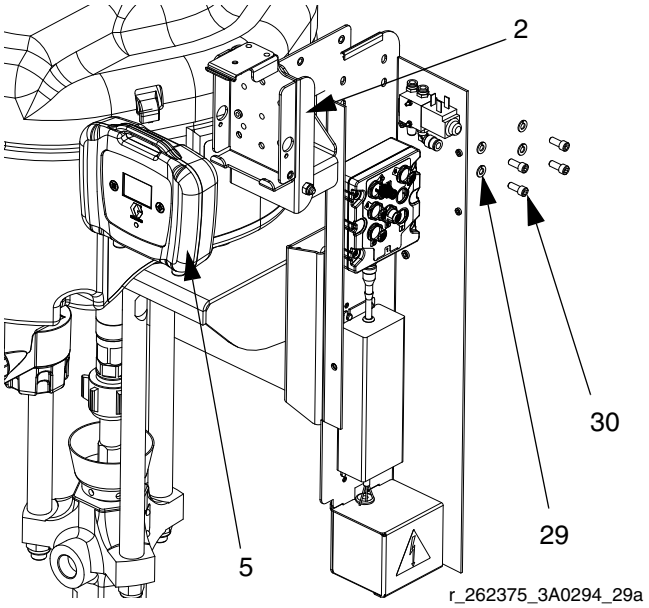



**FIG. 83: Install Display Bracket**

6. Snap the display (5) into the display bracket.
7. Install the linear sensor assembly (18) and the reed switch sensor (22).
   a. Remove the air motor top cover using a flat head screwdriver.

**FIG. 84: Remove Air Motor Cover**

   b. Use a wrench to remove the air motor lift ring. Then remove the lift ring adapter and both o-rings. Discard the adapter and both o-rings.

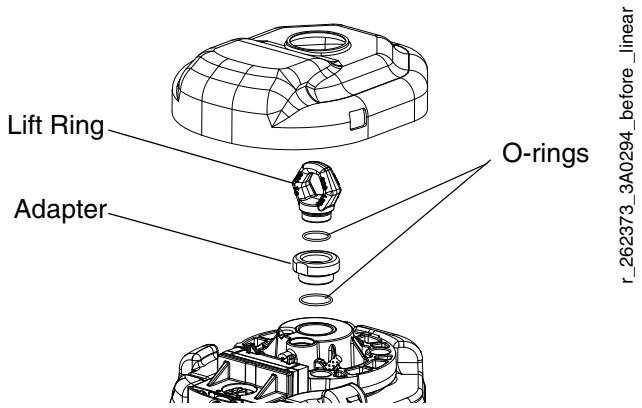



**FIG. 85: Remove Lift Ring Adapter and O-rings**

   c. Place the linear sensor magnet (13) on the installation tool (27), and then insert the magnet down into the top of the motor shaft.
   d. Apply the supplied adhesive to the linear sensor assembly (18) threads. Install the linear sensor; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 86.
   e. Place the new o-ring (20) on the lift ring adapter (19), and apply the supplied adhesive to the threads. See FIG. 86.

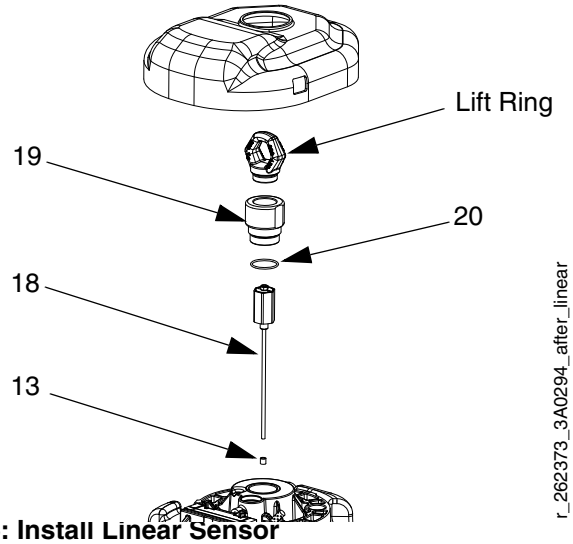



**FIG. 86: Install Linear Sensor**

   f. Route the linear sensor cable through the lift ring adapter. Install the lift ring adapter; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 86
   g. Route the linear sensor cable through the hole on the lift ring adapter.
   h. Apply the supplied adhesive to the lift ring. Install the lift ring; torque to 30-36 ft-lbs (40.6-48.8 N•m). See FIG. 86.
   i. Remove the screw on the valve cover to remove the cover. See FIG. 87.

j. Install the reed switch sensor (23). Secure with the 1 in. (255 mm) screw (25) and o-ring (24) provided.

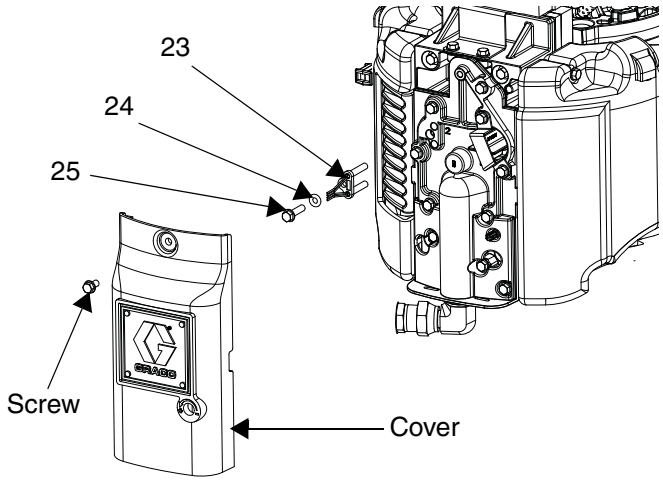



**FIG. 87: Install Reed Switch Sensor**

k. Connect the strain relief guide (27) to the reed switch sensor. Use a wrench to tighten the 1/2 in. screw (26) on the strain relief guide and to secure it to the top plate of the air motor.

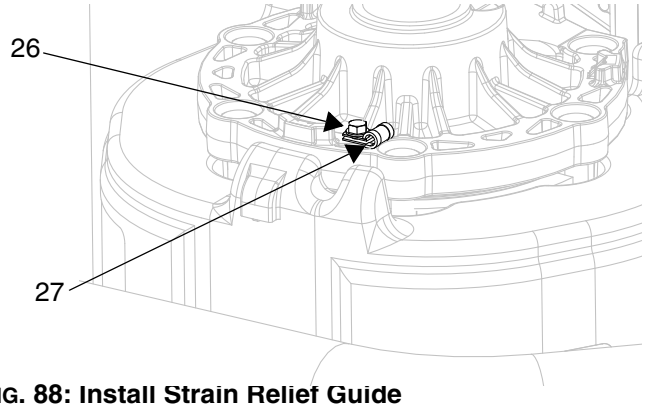



**FIG. 88: Install Strain Relief Guide**

l. Use a zip tie to secure the reed switch sensor cable.

m. Reinstall the valve cover, and tighten the nut.

n. Remove the plug in the air motor cover. Route the linear sensor cables through the hole in the back of the cover. Snap the air motor cover back into place.

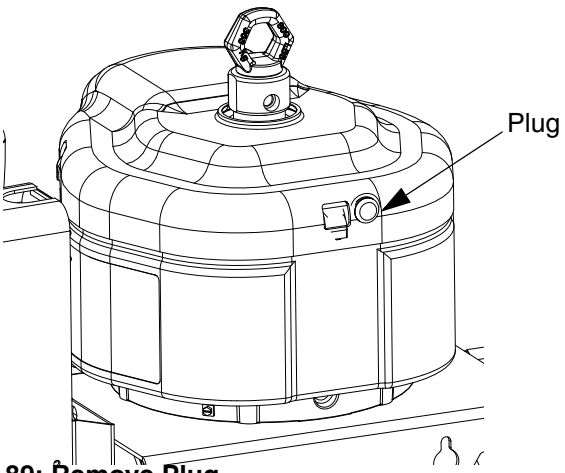



**FIG. 89: Remove Plug**

8. *Without integrated air controls only:* Install valve subassembly (6) and fittings.

a. Apply the supplied adhesive to the adapter fitting (31). Screw the fitting into bottom of the air valve so that the fitting points away from the display module.

b. Apply the supplied adhesive to the pipe nipple fitting (32) and the pipe swivel fitting (33). Screw both fittings onto the valve assembly as shown.

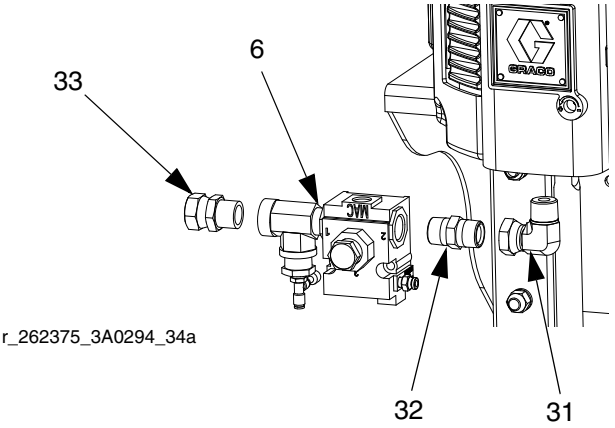



**FIG. 90: Install Valve Assembly (without air controls)**

c. Screw entire assembly onto the adapter fitting. Use two wrenches to tighten.

9. *With integrated air controls only:* Install valve assembly (6) and fittings.

   a. Apply the supplied adhesive to the pipe nipple fitting (32). Screw the fitting into the air control assembly.

   b. Apply the supplied adhesive to the adapter fitting (31) and the pipe swivel fitting (33). Screw both fittings onto the valve assembly as shown.

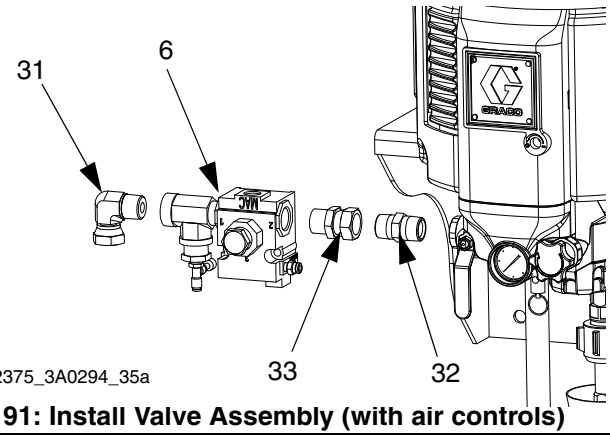



**FIG. 91: Install Valve Assembly (with air controls)**

   c. Screw the entire assembly onto the pipe nipple fitting. Use two wrenches to tighten.

10. Install cables. Reference the cable identification table below and FIG. 93 for a diagram of cable connections.

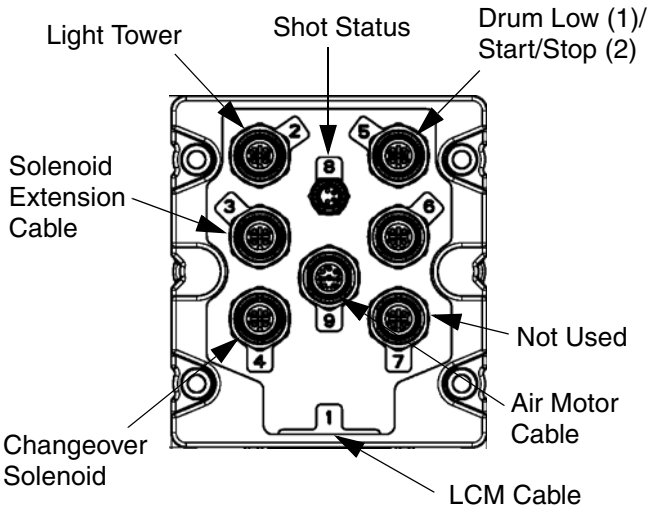



**FIG. 92: Breakout Module Connections**

| 262375 Cable Identification | | | | | |
|---|---|---|---|---|---|
| **Description** | **Part** | **Labels (relative to graphic)** | | **Length in. (mm)** | **Connectors** |
| Power Cable | 121226 | PS1 | None | 16 (406.4) | |
| DB25 | 15T859 | 1(blue) | None | 120 (3048) | |
| Pigtail | 15X619 | AM1 | LS1/RS1 | 17 (431.8) | |
| Motor cable | 9(grey) | AM1 | | 118 (2997.2) | |
| Solenoid Extension | 122030 | 3(red) | Y1(yellow) | 20 (508) | |
| Accessory Kit | | 5(grey) | Y2(orange) | | |
| Air Solenoid | 121806 | AV | 1(yellow) | 20 (508) | |
| Fluid Solenoid | | FV | 2(yellow) | | |
| Pressure Sensor Extension | - | - | - | - | - |

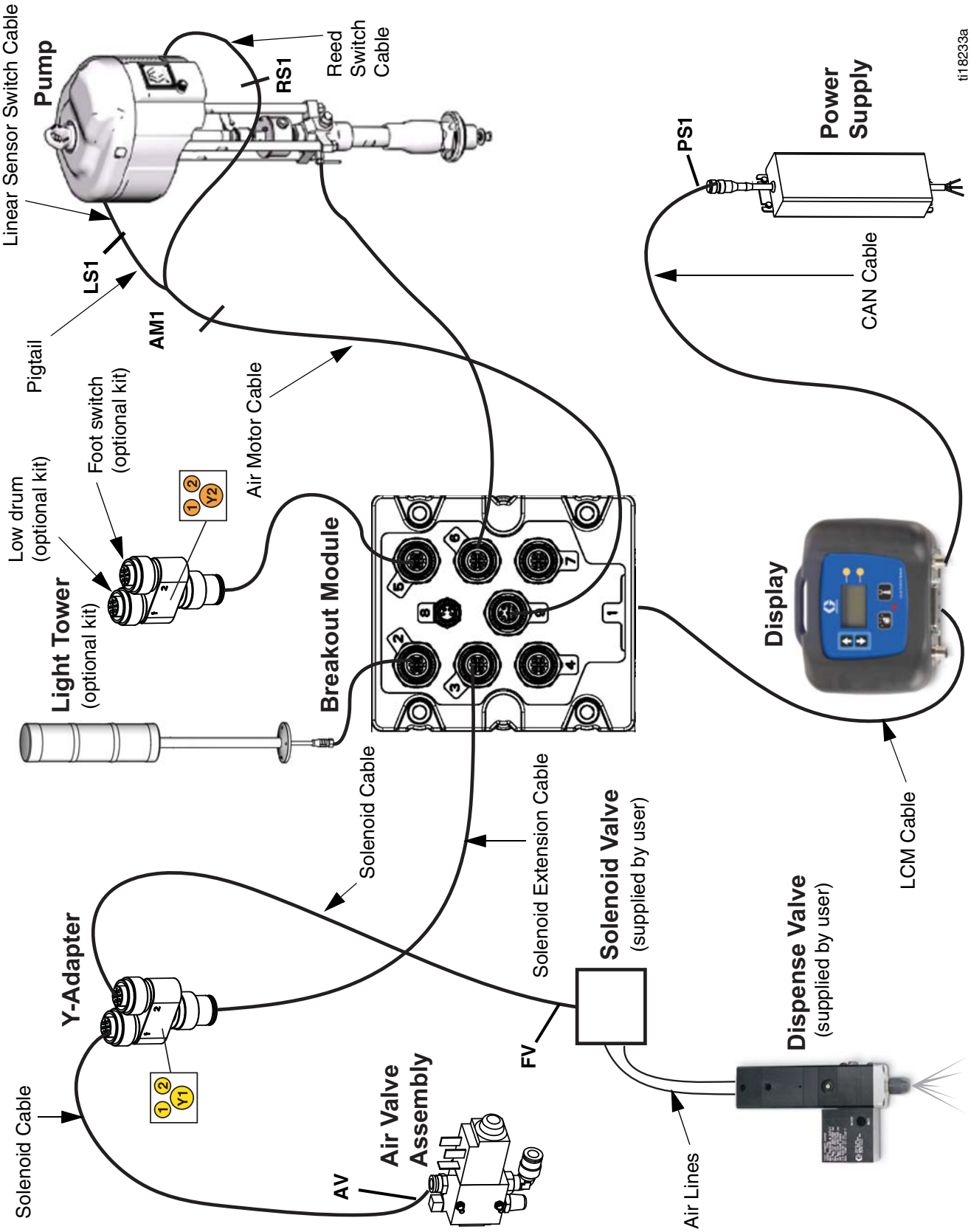



**FIG. 93: Cable Connections - Wall Mount or Floor Stand Pumps with Large NXT**

11. Install the pressure sensor on the pump bleed port.

    a. Use a wrench to remove the pressure valve.

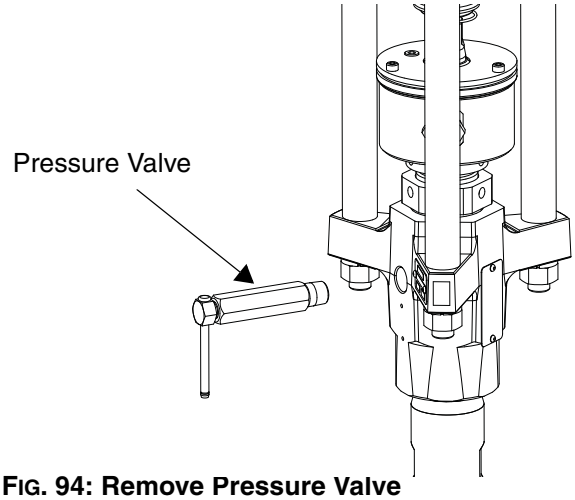



**FIG. 94: Remove Pressure Valve**

    b. Apply the supplied sealant to the adapter (42), the manifold (43), and the pressure valve. Install all three in the order listed.

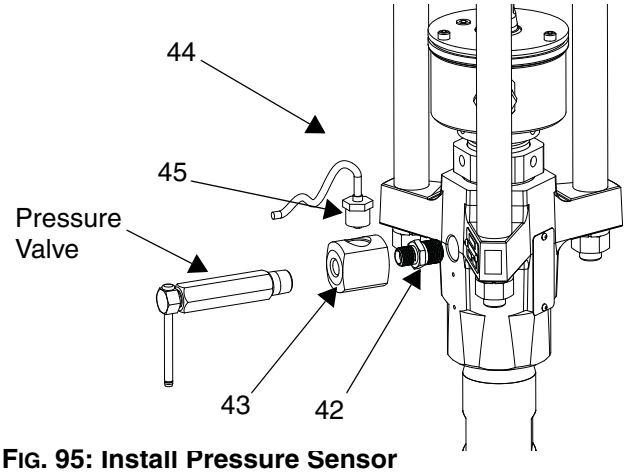



**FIG. 95: Install Pressure Sensor**

    c. Disconnect pressure sensor at PT1.

    d. Install the o-ring (45) and pressure sensor (44). See FIG. 95.

12. Bundle the cables and zip tie them close to the electronics bracket (1) so that they will fit under the electronics subassembly cover (4).

13. Install the air lines (34).

    a. Connect the air lines to the valve subassembly (6) as shown.

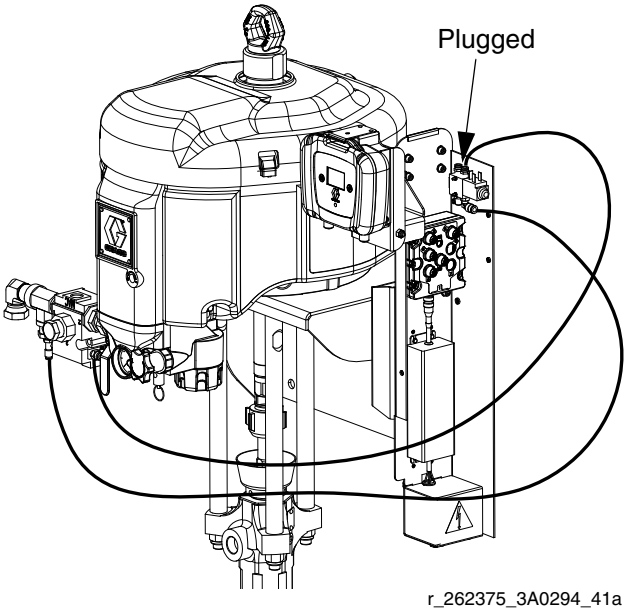



**FIG. 96: Install Air Lines - Air Valve**

    b. Run the air lines between the adapter bracket and connect them to the top port and bottom port of the solenoid valve assembly as shown. See FIG. 96 and FIG. 97.

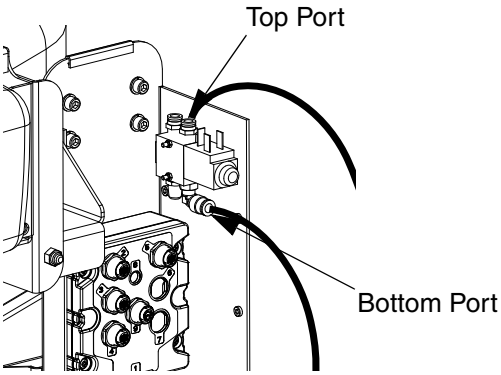



**FIG. 97: Install Air Lines - Solenoid Valve**

    c. Zip tie both air lines to the pump tie rod.

14. Install the electronics subassembly cover (4); hand tighten the screws to secure.

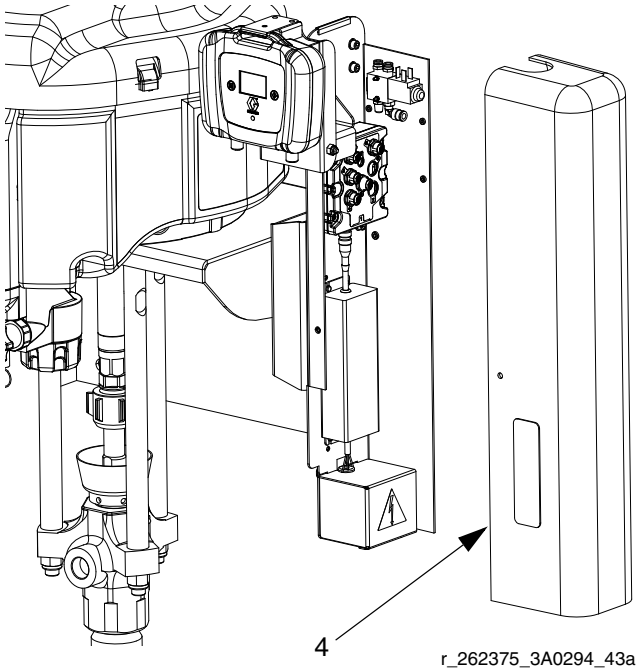



**FIG. 98: Install Cover**

15. Install the power supply cord (14).

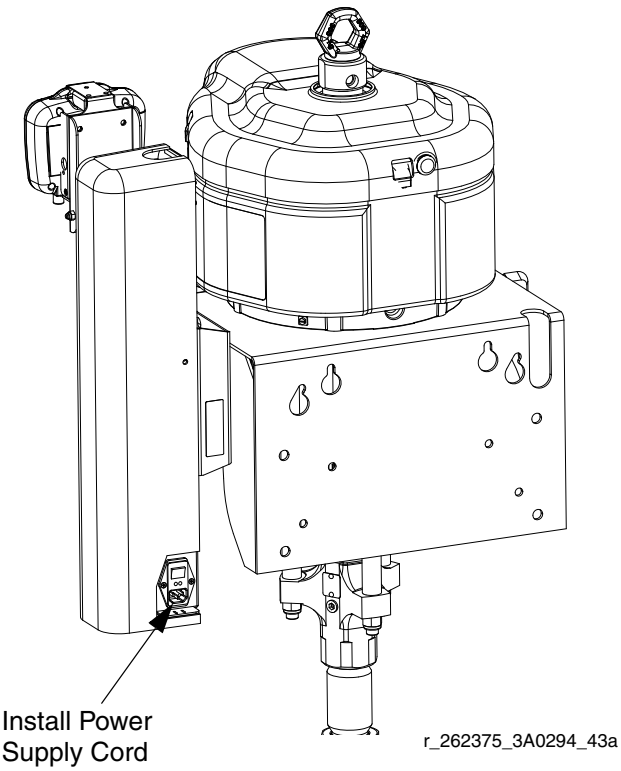



**FIG. 99: Install Power Supply Cord**

16. Turn on air supply to the system.

# Setup

**NOTE:** For setup procedures specific your supply system or pump assembly, refer to the Supply Systems Operation manual or your specific pump package instructions-parts manual.

## Enter Password

If a password is enabled, the password entry screen automatically opens when you change to setup mode. Enter the password to access setup mode.

## Setup Pump

1. Follow the **Installation** guidelines on page 16.
2. Follow the **Installation** procedure for your particular shot dispense kit. The procedures start on page 16.
3. Fill displacement pump wet cup 2/3 full with Graco Throat Seal Liquid (TSL™).

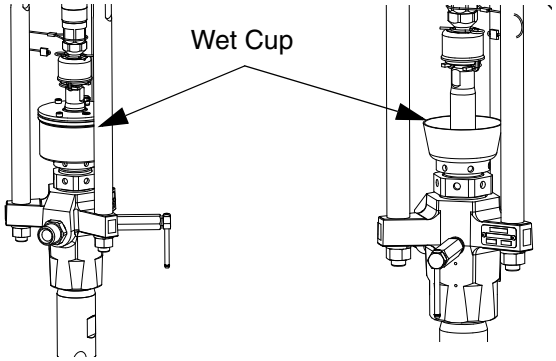
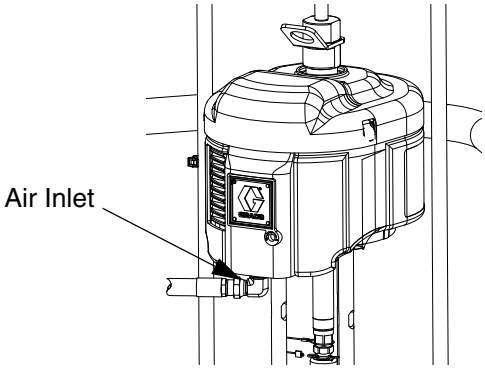



**FIG. 100: Fill Wet Cup**

4. Attach electrically conductive fluid hose to pump outlet and tighten.
5. Attach other end of electrically conductive fluid hose to dispense valve and tighten.
6. Shut off the air valve by pressing the Air On/Off soft key on the display module.
7. Back off the air regulators to their full counterclockwise position and close all shutoff valves for the rams.
8. Connect the air line from the air source to the system air inlet. See FIG. 101. Refer to your specific pump manual to determine the correct air supply flow requirements. Connect an air supply hose that is capable of meeting the required flow to the air motor air inlet.

**NOTE:** Quick disconnects restrict flow for NXT2200 and larger air motors.

NXT2200 and Larger Air Motors




NXT1800 and Smaller Air Motors

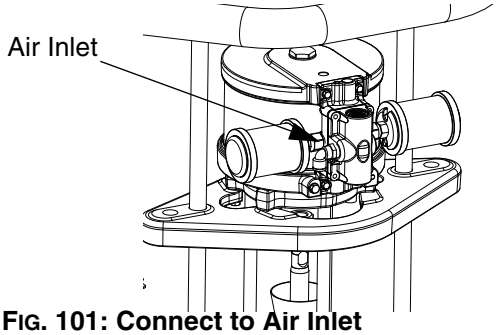



**FIG. 101: Connect to Air Inlet**

9. Connect air supply and electrical cable to the dispense valve and solenoid valve. See the dispense valve manual for instructions.
10. Flush and/or prime before using. See **Prime/Purge**, page 52, for instructions.

# Pressure Relief Procedure

Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing or moving parts

1. Lock the gun/valve trigger.
2. Change to manual mode in the run screen. See **Change Operation Mode**, page 62.
3. Shut off the air supply to the system.
4. Shut off the air valve by pressing the Air On/Off soft key on the display module.
5. Close the manual air valve.
6. Unlock the gun/valve trigger.
7. Hold a metal part of the gun/valve firmly to the side of a grounded metal pail, and press or step on the foot switch.
8. Lock the gun/valve trigger.
9. Open the material line drain valve and the pump bleeder valve. Have a container ready to catch the drainage.

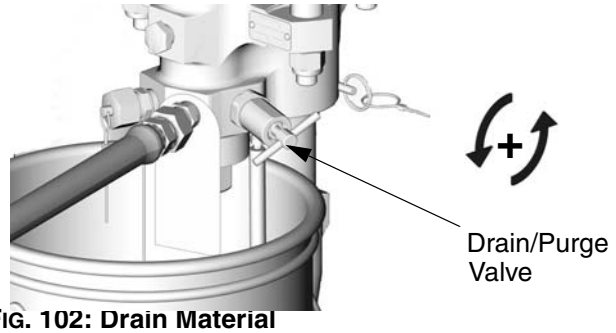
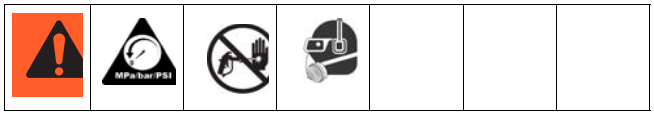



FIG. 102: Drain Material

10. Leave the pump bleeder valve open until you are ready to spray/dispense again.
11. If you suspect that the spray tip/nozzle or hose is completely clogged, or that pressure has not been fully relieved after following the previous steps, very slowly loosen the tip guard retaining nut hose end coupling and relieve pressure gradually; then loosen completely. Now clear the tip/nozzle or hose.

# Prime/Purge



1. Follow **Pressure Relief Procedure** on page 51.
2. *Priming only:* replace pail of material if necessary.
3. Remove the spray tip and tip guard from gun or remove the nozzle from the dispense valve.
4. *Flushing only:* If desired, remove built-in fluid filter (present on some models). Reinstall filter cap after removing fluid filter.
5. Place pump in material (if priming) or solvent (if flushing).
6. Turn air regulator to 0 psi.
7. Open the manual shutoff valve(s).
8. Perform a manual purge.
   a. Change to manual mode in the run screen. See **Change Operation Mode**, page 62.
   b. Place a drain tube in a grounded waste pail. Open drain/purge valve slightly by rotating counterclockwise.

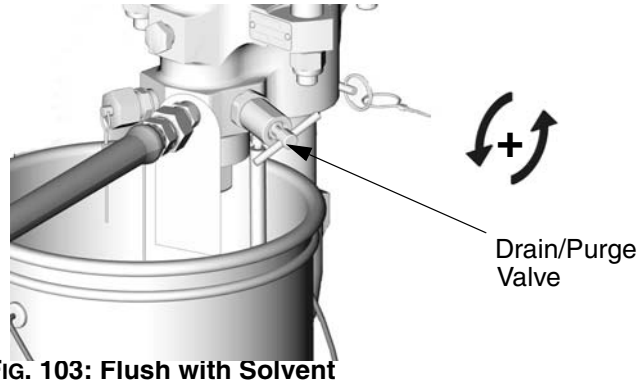



**FIG. 103: Flush with Solvent**

   c. Increase pressure on the air regulator until the pump begins to move. Run the pump until no air is released from the drain/purge valve or until clean solvent flows from the drain tube. Close drain/purge valve by rotating clockwise. The pump will stall.
9. Prime or purge hose and gun/valve.
   a. If necessary, change to manual mode in the run screen. See **Change Operation Mode**, page 62.
   b. Hold a metal part of the gun/valve firmly to the side of a grounded metal pail.
   c. Press and hold or step on the foot switch (purchase separately) until all air in the hose is purged
10. If priming, the system is now ready to dispense; go to **Dispense a Shot**, page 65.

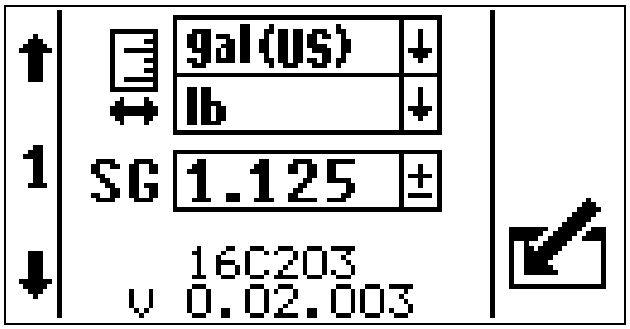
    If flushing, follow the **Operation** on page 62; leave the solvent in and store the equipment.

# Set System Parameters

**NOTE:** Refer to **Appendix B - Tips**, page 102, for setup guidelines and tips.

## Set Units and Specific Gravity

1. Navigate to setup screen 1.




2. Press to access fields to make changes.

3. Press to navigate to the units of measure fields.

4. Press to open the first drop-down box. Press to select the desired units.

5. Press to save selection.

6. Press to navigate to the next drop-down box, and perform the same two steps.

7. Press to navigate to the specific gravity (SG) field.

**NOTE:** If the specific gravity is unknown, use the calibration routine to enter it automatically. See **Calibrate** on page 60 for calibration instructions.

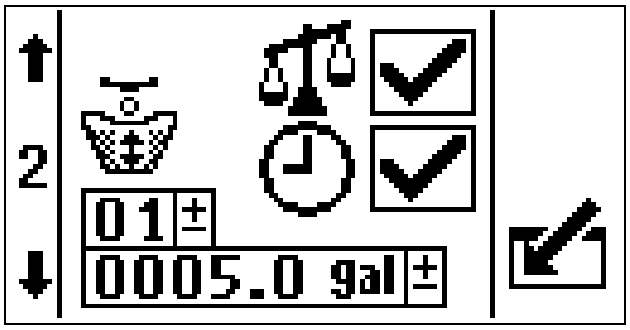
8. Press and to increment or decrement to the specific gravity of the material being dispensed.

9. Press to save the selection.

10. Press to exit edit mode.

## Define Shot Size

Up to 25 shots (1 – 25) can be defined in the setup shot screen.




To define a shot size:

1. Navigate to setup screen 2.
2. Press to access fields to make changes.
3. Press to navigate to the shot number field.
4. Press to scroll through the 25 shot numbers.
5. Press to select the desired shot number.
6. Press to navigate to the fluid weight field.
7. Press and to increment or decrement to the desired shot size.
8. Press to accept the shot size.
9. Define another shot size.
   a. Press to move to the shot number field.
   b. Repeat steps 4 through 8 to define the next shot size.
10. Press to exit edit mode.

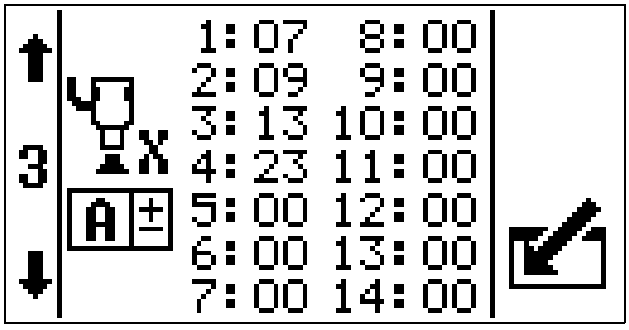
## Define Shot Sequence

Up to 5 sequences (A – E) can be programmed. Each sequence can have up to 14 shot positions and each shot position can be one of the possible 25 shots.

**NOTE:** Only shots that are already defined can be added to a shot sequence.

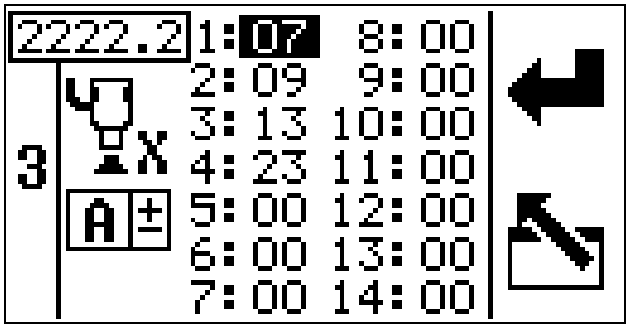
To edit a shot sequence:

1. Navigate to setup screen 3.




2. Press to access the fields.
3. Press to navigate to the shot sequence field. Press to select the field.
4. Press to scroll through the shot sequences.
5. Press to select the desired shot sequence.
6. Press to navigate to the shot positions.
7. Press and to navigate through each shot position and to select shot numbers.

**NOTE:** When a shot number is selected the shot volume box will display.

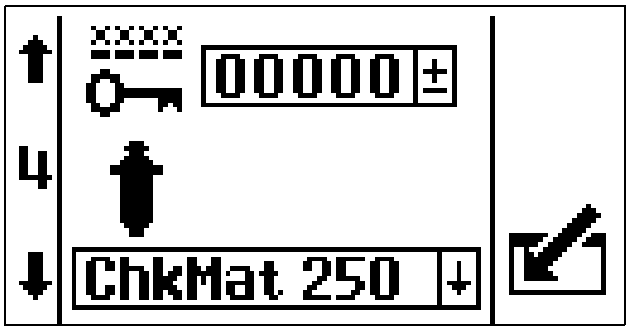



8. Press to select the desired shot.
9. Once all shot positions and shot numbers are configured for the shot sequence, press to exit edit mode.

# Set Password

**NOTE:** When the password is “00000,” the setup screens can be accessed without entering a password.

1. Navigate to setup screen 4.




2. Press to access fields to make changes.
3. Press to navigate to the first password field.
4. Press and to increment or decrement to the desired digits of the password.
5. Press to enter the password.
6. Press to navigate to the next password field. Follow steps 4-5 to enter and confirm the password.
7. Press to exit edit mode.

## Disable Password

To disable the password, follow **Set Password**, page 56, to change the password to “00000.”

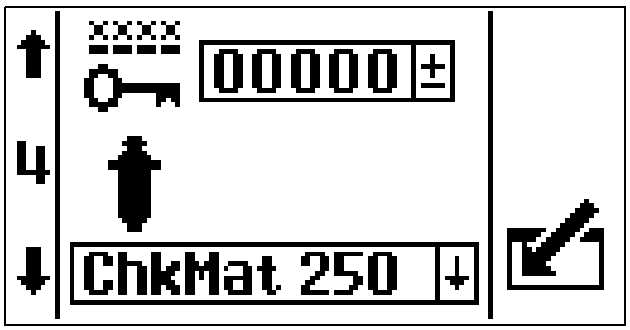
## Reset Password

If the password is forgotten, it can be reset without losing the current settings or shot data.

1. Disconnect power to the user interface.
2. Reconnect power to the user interface.
3. When the power up screen appears, immediately press and hold both the top soft key and the for six seconds. The password automatically resets to “00000.”
4. Follow the **Set Password**, page 56, instructions to set the password if desired.

## Select Pump

1. Navigate to setup screen 4, if necessary.

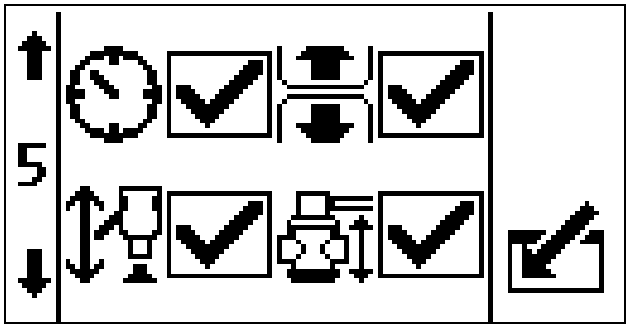



2. Press to access fields to make changes.
3. Press to navigate to the pump selection field.
4. Press to scroll through the pump options.
5. Press to select the correct pump size for the system.
6. Press to exit edit mode.

## Enable/Disable Pump Functions

See **Setup Screen 5 - Enable/Disable Pump Functions**, page 96, for a description of each pump function.

1. Navigate to setup screen 5.

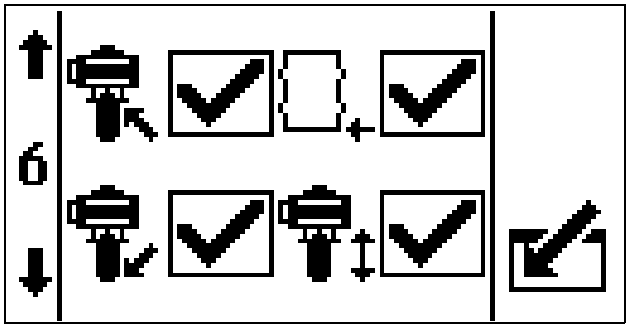



2. Press to access fields to make changes.
3. Press to navigate to each pump function field.
4. Press to enable or disable each pump function.
5. Press to exit edit mode.

## Enable/Disable Errors

See , page 92, for an explanation of each error function.

1. Navigate to setup screen 6.




2. Press to access fields to make changes.
3. Press to navigate to each error field.
4. Press to enable or disable each error code.
5. Press to exit edit mode.

## Set Low/Empty Drum Error

Follow the **Enable/Disable Errors** steps to set either the empty drum alarm or low drum advisory.

Refer to the **Errors** section on page 66 for more information on alarms and advisories, and how to clear an alarm or advisory.

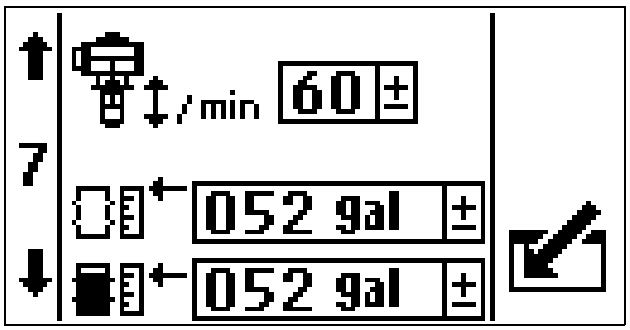
The low/empty drum error code **L1** is used for the empty drum alarm , and error code **L2** is used for the low drum advisory .

When **L1** is enabled the drum empty alarm is enabled and displays. The alarm icon displays if an empty drum alarm occurs.

When **L2** is enabled the low drum advisory is enabled and displays. The advisory icon displays if a low drum advisory occurs.

## Set Pump Runaway Error

1. Navigate to setup screen 7.

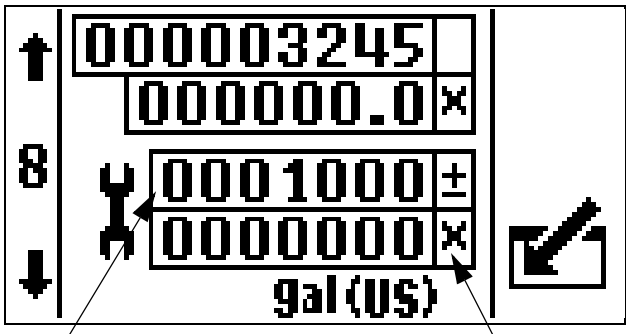



2. Press to access fields to make changes.
3. Press to navigate to the pump runaway cycle rate field.
4. Press and to increment or decrement to the desired cycle rate. Graco recommends setting the cycle rate to 60 or less. Choose a value that is just above the maximum cycle rate of the application.
5. Press to save the set cycle rate.
6. Press to exit edit mode.

## Set Maintenance Parameters

Set the amounts of material moved through the pump and dosing valve that will result in a maintenance advisory or alarm.

1. Navigate to setup screen 8.



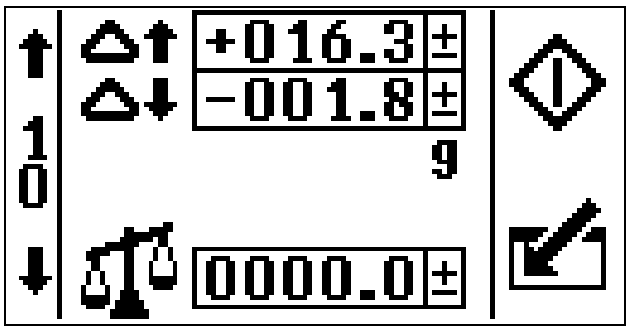

2. Press to access fields to make changes.
3. Press to navigate to the maintenance setpoint field.
4. Press and to increment or decrement to the desired amount of material that will result in an advisory when the total volume dispensed exceeds the maintenance setpoint.
5. Press to save this amount.
6. If an advisory occurs, press to navigate to the total volume dispensed field. Clear the field to reset the advisory.
7. Press to exit edit mode.

## Calibrate

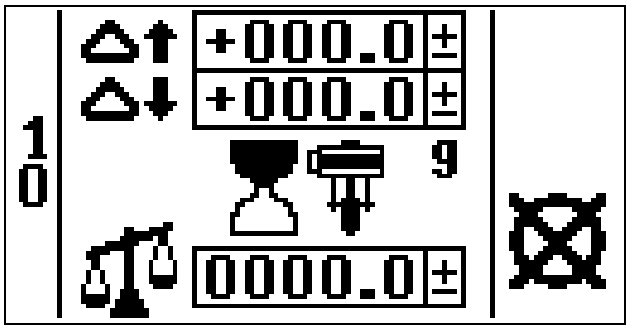
The actual weight/volume of material dispensed may vary slightly from the displayed weight/volume. Use the following procedure to calibrate the system as needed.

Calibration values can be set manually. However, it is recommended to run the calibration procedure when needed.

1. Navigate to setup screen 10.



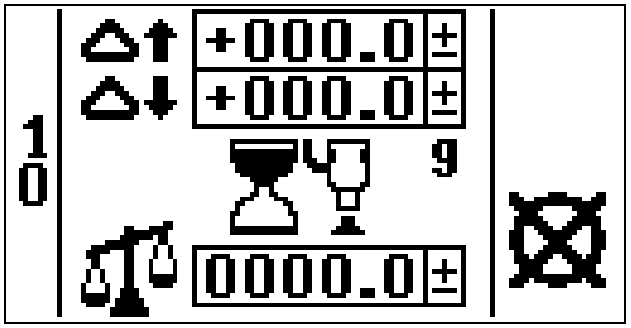

2. Press to start the overshoot calibration process. The icons will display.




3. Place a container that is at least as large as the pump volume under the dispense valve.

4. Hold down or the foot switch to run the system. The manual mode icon will flash. The pump will go through the first changeover, stop to measure the overshoot, then complete the second changeover and stop.

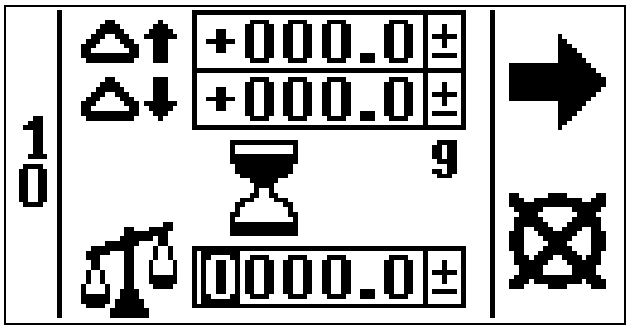
5. Release the start button or foot switch. The hour glass icon is updated and the shot mode icon will display.




6. Remove any excess material from the dispense valve, if necessary.

7. Empty the container, if necessary. Set the scale to zero.

8. Press to dispense a shot into the container. When the shot completes the shot icon will disappear and the first digit of the weight field will be highlighted.



9. Remove any excess material from the dispense valve, if necessary. Include this material in the weight of the shot.
10. Weigh the shot on the scale.
11. Press → and ↑ ↓ to enter the shot weight in the weight field.
12. Set the scale to zero.
13. Perform steps 1-6 three more times.

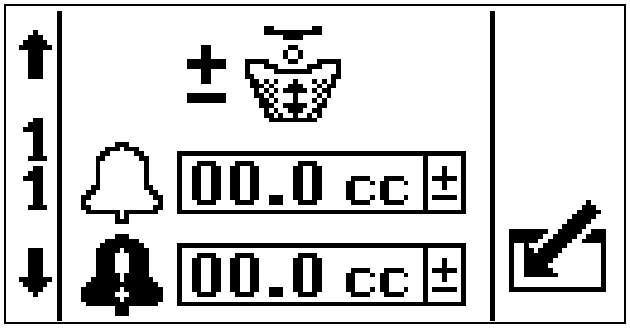
After you have entered the fourth shot weight in the weight field, the material delta top and bottom fields (calibration values) will automatically update and the specific weight SG on setup screen 1 will update. The calibration procedure is now complete.

## Set Shot Accuracy Errors

Use this screen to set the shot volume deviation from the shot setpoint that will cause an advisory or alarm.

**NOTE:** If either the advisory field or alarm field is set to zero, the error is disabled.

1. Navigate to setup screen 11.




2. Press ✎ to access fields to make changes.
3. Press ↑ ↓ to navigate to the advisory field.
4. Press ↵ to enter the advisory field.
5. Press → and ↑ ↓ to set the value in the advisory field.
6. Press ↵ to enter the value.
7. Follow steps 4 through 7 for the alarm field.
8. Press ✎ to exit edit mode.

# Operation

**NOTE:** The shot dispense kit controller modifies pump packages and supply systems. However, the operation procedures from the pump packages instructions-parts manuals and the Supply Systems Operation manual still apply.

## Startup

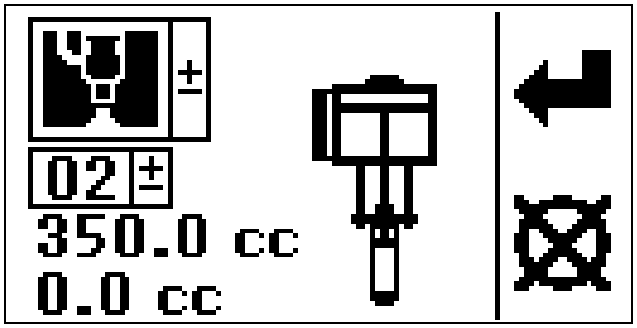
1. Refer to your Supply System Operation manual or pump package instruction-parts manual for system startup instructions.
2. Turn on the user interface display and wait for the power up screen to complete and the run screen to appear.

## Change Operation Mode

There are four operation modes: shot mode, sequence mode, manual mode, and park mode. This section explains each operation mode. See , page 92, for more details about the operation modes and the run screens.

Use the following instructions to change between operation modes.

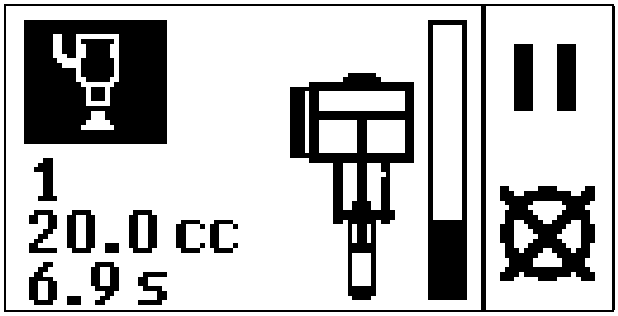
1. Press to access fields to make changes.
2. Press to navigate to the operation mode field.




3. Press to enter operation mode field.
4. Press to scroll through the operation mode choices.
5. Press to select the desired operation mode.
6. Press to exit edit mode.

### Shot Mode

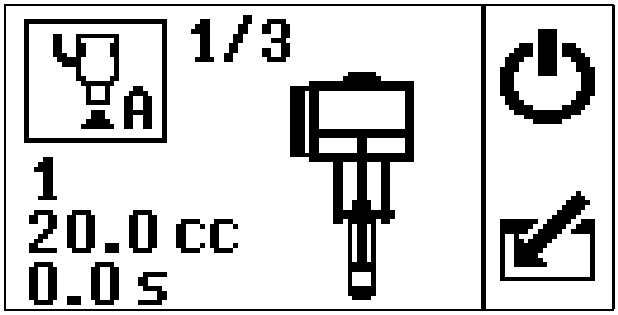
Shot mode dispenses a specific volume or weight of material. When the shot completes the user can start another identical shot. Shots first need to be defined in setup screen 1. Up to 25 shots can be programmed. See **Define Shot Size**, page 54.



## Sequence Mode

Sequence mode dispenses a sequence of shots in a specific order. Sequences first need to be defined in setup screen 3. Up to five (A - E) sequences can be programmed. See **Define Shot Sequence**, page 55.

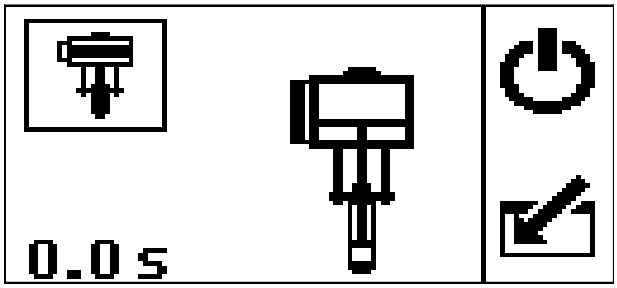
After the first shot in a sequence completes, the next shot can start. After all of the shots in a sequence have completed, the sequence will start over at the first shot.




## Manual Mode

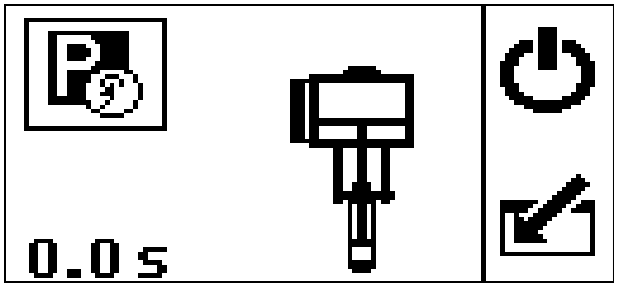
Manual mode runs the pump when is pressed or when the dispense valve is triggered. Use manual mode to determine how much material is needed to fill a container, prime the system, flush the system, or verify system operation.

**NOTE:** All errors are ignored in this mode.




## Park Mode

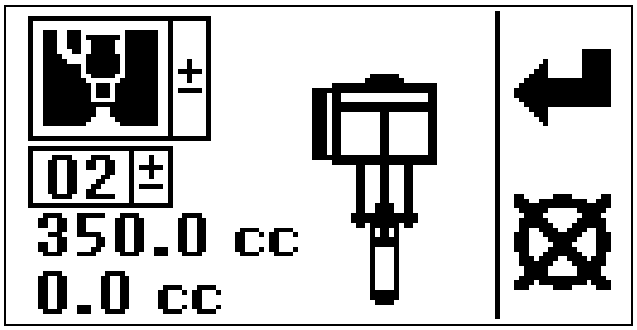
Park mode dispenses material until the pump reaches the bottom of its stroke. Then the system will disable.



## Select a Shot Number

Shots are defined in setup screen 2. See **Define Shot Size**, page 54, for instructions.

1. Change operation mode to shot, if necessary. See **Change Operation Mode**, page 62, for instructions.
2. Press ▲ ▼ to navigate to the shot number field 02 ± .

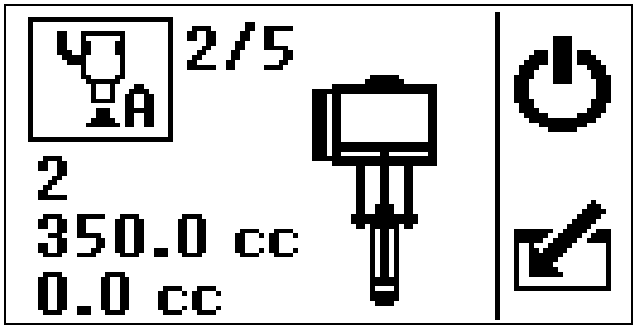



3. Press ↵ to enter the shot number field.
4. Press ▲ ▼ to increment or decrement to the desired shot number.
5. Press ↵ to select the desired shot number.
6. Dispense the shot. See **Dispense a Shot**, page 65. The actual volume dispensed will display under the desired dispense volume.
7. Follow steps 2 through 6 to select and dispense another shot.
8. When you are finished selecting and dispensing shots press ✎ to exit edit mode.

## Select a Shot Sequence

Sequences are defined in setup screen 3. See **Define Shot Sequence**, page 55, for instructions.

1. Change operation mode to sequence, if necessary. See **Change Operation Mode**, page 62, for instructions.
2. Press ▲ ▼ to navigate to the current mode field, which should be set to shot sequence A .

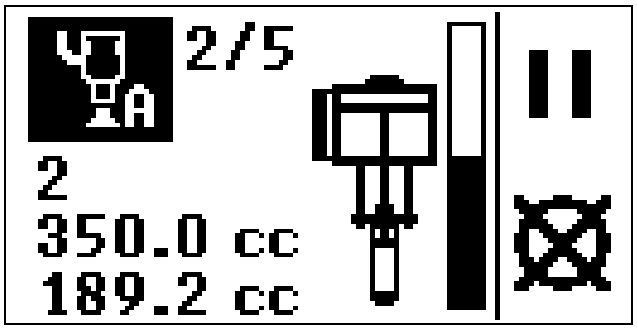



3. Press ↵ to enter the field.
4. Press ▲ ▼ to scroll through the available shot sequences.

**NOTE:** All defined sequences (A-E) can be selected from the run screen. Any sequences that are not defined can not be selected from the run screen. Sequences are defined in Setup Mode; see **Define Shot Sequence** on page 55.

5. Press ↵ to select the desired shot sequence.

6. Dispense the shot sequence. See **Dispense a Shot**, page 65. The actual volume dispensed will display under the desired dispense volume.




7. Follow steps 2 through 6 to select and dispense another shot sequence.

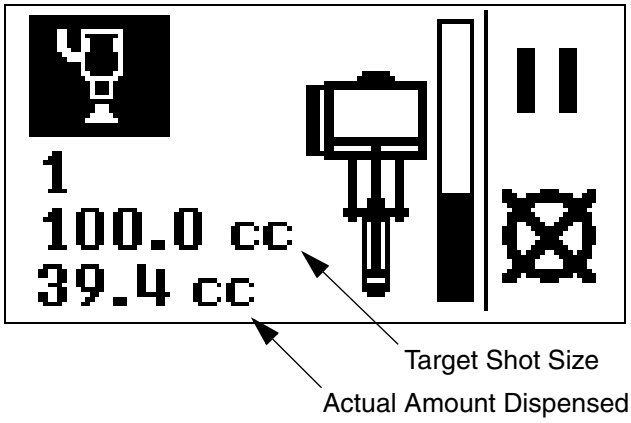
8. When you are finished selecting and dispensing shot sequences press to exit edit mode.

## Dispense a Shot

1. Ensure the air is on.

2. Follow **Select a Shot Number**, page 64, or **Select a Shot Sequence**, page 64.

3. Press or step on the foot switch (purchase separately) to begin dispensing. The shot progress bar will display on the screen during the shot.



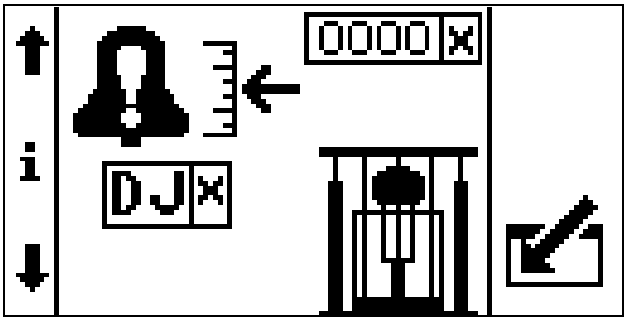

## Pause or Cancel a Shot

When a shot is in progress, press , , or step on the foot switch to pause the shot. Press to cancel the shot. When the system is paused, press , , or the foot switch to continue dispensing.

**NOTE:** The dispense will automatically stop once the target shot size has been dispensed.

# Errors

From the Run screen, press to navigate to the Information screen. The Information screen displays the current alarm or advisory, and the amount of remaining material in the drum.




Alarms, indicated by , require immediate attention; therefore, the system disables and the Information screen automatically displays. Deviations, indicated by , require attention, but not immediately. Advisories, indicated by , do not require attention. Therefore, if a deviation or advisory occur, the system continues running and or displays next to the operation mode field.

## Errors with Light Tower

If you have a system that uses a light tower, errors are indicated by the light tower as well as on the display. The following table explains the error type that is associated with the particular light tower LED.

| Light Tower LED | Description |
|---|---|
| No LED | No errors exist |
| Yellow Solid | An advisory exists |
| Red Flashing | A deviation exists |
| Red Solid | An alarm exists and the system shuts down |

## Clear Errors

To clear an error:

1. Press to access the fields.
2. Press to navigate to the error code reset field.
3. Highlight the error code. Press to clear the error code.
4. Press to exit edit mode

# Error Codes

| Code | Icon | Code Name | Light Tower Code | Cause | Solution |
|---|---|---|---|---|---|
| **Alarms** | | | | | |
| **B1** | | Shot Volume Less than Error Setpoint | Red Solid | Shot volume is less than the error setpoint. | Increase the error setpoint on Setup screen 11. Increase shot consistency by decreasing speed and valve shutoff time, and increasing material back-pressure. |
| **B4** | | Shot Volume Greater than Error Setpoint | Red Solid | Shot volume is greater than the error setpoint. | Increase the error setpoint on Setup screen 11. Increase shot consistency by decreasing speed and valve shutoff time, and increasing material back-pressure. |
| **DA** | | Pump Runaway | Red Solid | Pump is running faster than set runaway limit because of high air pressure, high material output, or exhausted material supply. | Decrease air pressure.<br>Decrease material output.<br>Replace material supply drum. |
| **DD** | | Pump Cavitation | Red Solid | Pump is diving down more than a half a stroke because of exhausted material supply. | Replace material supply drum. |
| **DJ** | | Linear Sensor | Red Solid | Linear sensor is not connected or it is reading outside maximum values. | Check linear sensor wiring and replace if necessary.<br>Check linear sensor and replace if necessary. |
| **DK** | | Reed Switch | Red Solid | Multiple up strokes without a down stroke, or multiple down strokes without an up stroke caused by damaged or disconnected reed switch. | Reconnect reed switch wiring.<br>Replace reed switch. |
| **DL** | | Top Changeover Solenoid | Red Solid | Solenoid is disconnected. | Plug in disconnected solenoid.<br>Replace damaged solenoid wires. |
| **DM** | | Bottom Changeover Solenoid | Red Solid | Solenoid is disconnected | Plug in disconnected solenoid.<br>Replace damaged solenoid wires. |

| Code | Icon | Code Name | Light Tower Code | Cause | Solution |
|---|---|---|---|---|---|
| **Alarms (continued)** | | | | | |
| **K1** | | Piston | Red Solid | Piston traveled less than one inch in ten seconds. | Verify dispense valve is not stuck closed. |
| | | | | | Verify adequate air pressure to machine. |
| **L1** | | Drum Empty | Red Solid | Drum empty sensor tripped. | Replace empty drum with a full drum. |
| **P6** | | Pressure Sensor | Red Solid | Pressure sensor is disconnected. | Reconnect pressure sensor. |
| | | | | Damaged pressure sensor wires. | Replace pressure sensor. |
| **WE** | | Dispense Valve | Red Solid | Dispense valve is stuck open. | Check air solenoid wiring and air connection. Replace or repair if necessary. |
| | | | | | Check dispense valve air connection. Replace or repair if necessary. |
| **WJ** | | Air Solenoid | Red Solid | Air solenoid is disconnected. | Plug in disconnected air solenoid. |
| | | | | Damaged air solenoid wires. | Replace air solenoid. |
| **WK** | | Fluid Solenoid | Red Solid | Fluid solenoid is disconnected. | Plug in disconnected fluid solenoid. |
| | | | | Damaged fluid solenoid wires. | Replace fluid solenoid. |
| **WS** | | Invalid Pump | Red Solid | Invalid pump setup. | Select a valid pump in the Setup screens. |

| Code | Icon | Code Name | Light Tower Code | Cause | Solution |
|---|---|---|---|---|---|
| **Deviations** | | | | | |
| **DF** | | Diving Up | Red Flashing | Pump leaking during up stroke. | Replace worn piston valve or packings. |
| **DG** | | Diving Down | Red Flashing | Pump leaking during down stroke. | Replace worn intake valve or priming rod seal. |
| **Advisories** | | | | | |
| **B2** | | Shot Volume Less than Advisory Setpoint | Yellow Solid | Shot volume is less than the advisory setpoint. | Increase the advisory setpoint on Setup screen 11. Increase shot consistency by decreasing speed and valve shutoff time, and increasing material back-pressure. |
| **B3** | | Shot Volume Greater than Advisory Setpoint | Yellow Solid | Shot volume is greater than the advisory setpoint. | Increase the advisory setpoint on Setup screen 11. Increase shot consistency by decreasing speed and valve shutoff time, and increasing material back-pressure. |
| **B9** | | Inconsistent Shot | Yellow Solid | A possible inconsistent shot caused by a shot volume less than overshoot. | Request a larger shot.<br>Verify that shot volume variation is okay. |
| **L2** | | Drum Low | Yellow Solid | Drum low empty sensor has tripped. | Replace empty drum with a full drum. |
| **MA** | | Maintenance Counter | Yellow Solid | Maintenance counter has expired. Maintenance counter has counted down to 0 from setpoint. | Volume specified by setpoint has passed since last reset. |

# Shutdown

**NOTICE**

Never leave water or water-base material in pump overnight. If you are pumping water-base material, flush with water first, then with a rust inhibitor, such as mineral spirits solvent (or white spirit). Relieve pressure, but leave rust inhibitor in pump to protect parts from corrosion.

1. Follow the **Pressure Relief Procedure** on page 51.
2. Remove the spray tip and tip guard from gun or remove the nozzle from the dispense valve.
3. Place siphon tube in grounded metal pail containing cleaning fluid.

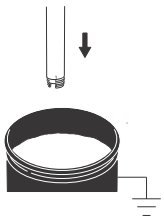
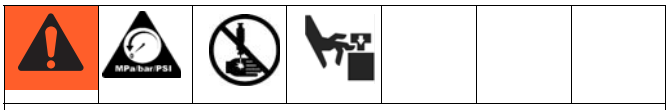


**FIG. 104**

4. Turn the regulator adjustment knob counterclockwise to the lowest possible fluid pressure.
5. Change to manual mode in the run screen. See **Change Operation Mode**, page 62.
6. Hold a metal part of the gun/valve firmly to the side of a grounded metal pail, and press or step on the foot switch (purchase separately) until clean solvent dispenses.
7. Follow the **Pressure Relief Procedure** on page 51, again.

# Maintenance



To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 51.

## Preventive Maintenance Schedule

The operating conditions of your particular system determine how often maintenance is required. Establish a preventive maintenance schedule by recording when and what kind of maintenance is needed, and then determine a regular schedule for checking your system.

## Pump Maintenance

### Wet Cup

Check the wet cup daily. Keep it 2/3 full with Graco Throat Seal Liquid (TSL) or compatible solvent.

### Corrosion Protection

Always flush the pump before the material dries on the displacement rod. Never leave water or water-based material in the pump overnight. First, flush with water or a compatible solvent, then with mineral spirits solvent (or white spirit). See **Prime/Purge**, page 52, for flushing instructions. Relieve the pressure (see **Operation**, page 62), but leave the mineral spirits in the pump to protect the parts from corrosion.

### Seals

Once a week, check and tighten throat seals on pump. Be sure to follow the **Operation**, page 62, prior to tightening seals.

## Supply System Maintenance

### Platen Maintenance

If the platen does not come out of the pail easily when the pump is being raised, the air assist tube, or check valve may be plugged. A plugged valve prevents air from reaching the underside of the plate to assist in raising it from the pail. See the Supply Systems Repair-Parts manual for instructions.

### Adjust Spacers

Adjust spacers to be used with tapered pails if necessary. See the Supply Systems Repair-Parts manual for instructions.

### Replace Wipers

To replace worn or damaged wipers, see the Supply Systems Repair-Parts manual for instructions.

## Cleaning Procedure

1. Ensure all equipment is grounded. See **Installation**, page 16.
2. Ensure the area where the system will be cleaned is well ventilated; and remove all ignition sources.
3. Relieve pressure. See **Operation**, page 62.
4. Shutdown system and turn off all power. See **Shutdown**, page 70.
5. Clean external surfaces only using a rag soaked in solvent that is compatible with the dispense material and the surfaces being cleaned.
6. Clean the display with any alcohol-based household cleaner, such as glass cleaner.
7. Allow enough time for solvent to dry before using system.

# Upgrade Display Software

**NOTICE**

To avoid damaging circuit board, wear a grounding strap.

1. Disconnect power.
2. Pull display out of bracket clips to remove it.
3. Remove screw and then access cover.

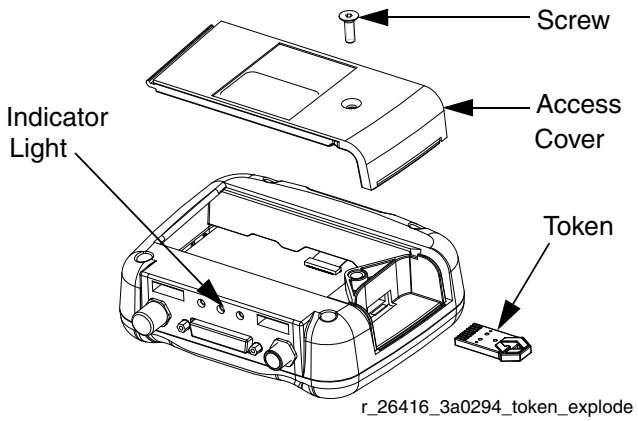



**FIG. 105: Upgrade Display Software**

4. Insert and press token firmly into slot.

**NOTE: There is no preferred orientation of token.**

5. Turn power on.
6. The red indicator light will flash until new software is completely loaded.
7. Turn power off.
8. Remove token.
9. Reassemble access cover and screw.
10. Snap display back into bracket and reconnect power.

# Clean User Interface Display

Use any alcohol-based household cleaner, such as glass cleaner, to clean the display.

# Troubleshooting

**NOTE:** Troubleshooting covered in this manual is specific to the shot dispense kits. Refer to your Supply Systems Repair-Parts manual or pump packages instructions-parts manual for system specific troubleshooting. For air motor or pump troubleshooting questions, refer to your NXT air motor instruction-parts manual or pump instructions-parts manual. See **Related Manuals**, page 3, for specific manual numbers.

1. Follow the **Operation**, page 62.
2. Disconnect all power to the supply system or pump package before repairing.
3. Check all possible problems before disassembling any part of the supply system, pump package, or shot dispense kit.

| Problem | Cause | Solution |
|---|---|---|
| Display volume matches pump volume but is consistently higher than nominal shot size. | System has not finished compensating for higher overshoot. | Dispense more shots. Shot volumes should converge on nominal. |
| Display volume matches pump volume but is consistently lower than nominal shot size. | System has not finished compensating for lower overshoot. | Dispense more shots. Shot volumes should converge on nominal. |
| Display volume does not match actual volume pumped. | Changeovers are out of calibration. | Perform calibration procedure; see **Errors**, page 66. |
| | Incorrect pump selected during setup. | Chose correct pump and pump size in setup screen 4. |
| Shots are consistently inaccurate. | See **Tips for Better Accuracy**, page 102. | See **Tips for Better Accuracy**, page 102. |
| Display shows shot is active when start button is pushed, but no material is pumped. | No air supply to the air motor. | Check air supply to air motor. |
| | Dispense valve is stuck closed. | Check the dispense valve to ensure it is opening and closing correctly. |
| | No air supply to dispense valve. | Check the dispense valve to ensure it is opening and closing correctly. |
| Shots that end near a changeover are noticeably less accurate. | Not enough shots have taken place within this area for the compensation factor to be accurate. | Continue dispensing shots. As more shots take place in this area accuracy will improve. |

# Repair

The shot dispense kits do not include any repairable parts. They include only replacement parts. Therefore, see the **Installation** section that is specific to your kit for instructions on replacing kit parts. Also use the **Electrical Schematics** section, page 75, as a reference.

For system specific repair procedures, refer to your Supply Systems Repair-Parts manual or pump package instructions-parts manual.

## Replace Display

**NOTE: Order Kit 262539 for replacement.**

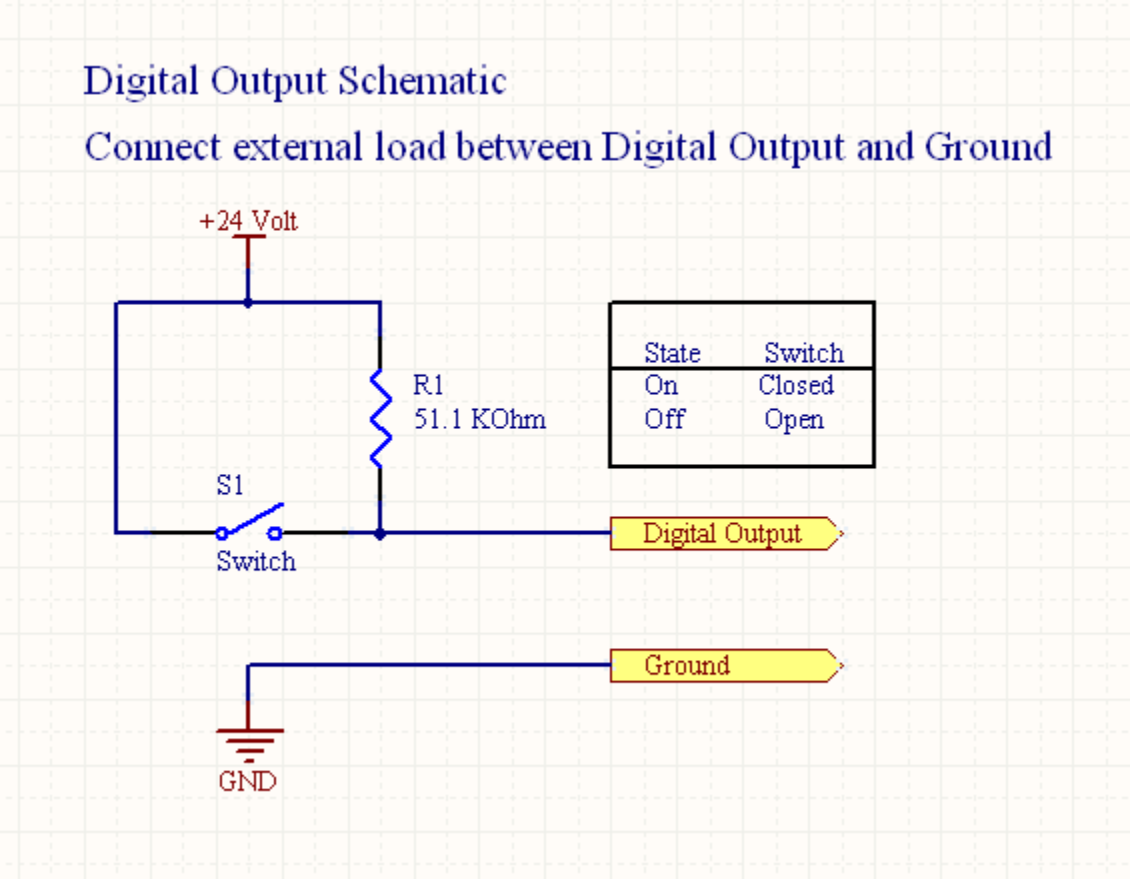
| NOTICE |
| --- |
| To avoid damaging circuit board, wear a grounding strap. |

1. Disconnect power.
2. Pull display out of bracket clips to remove it.
3. Disconnect both CAN cables.
4. Replace with new display. Reconnect both CAN cables.
5. Load the correct display software for the system. Follow the steps in **Upgrade Display Software** on page 72.

# Electrical Schematics

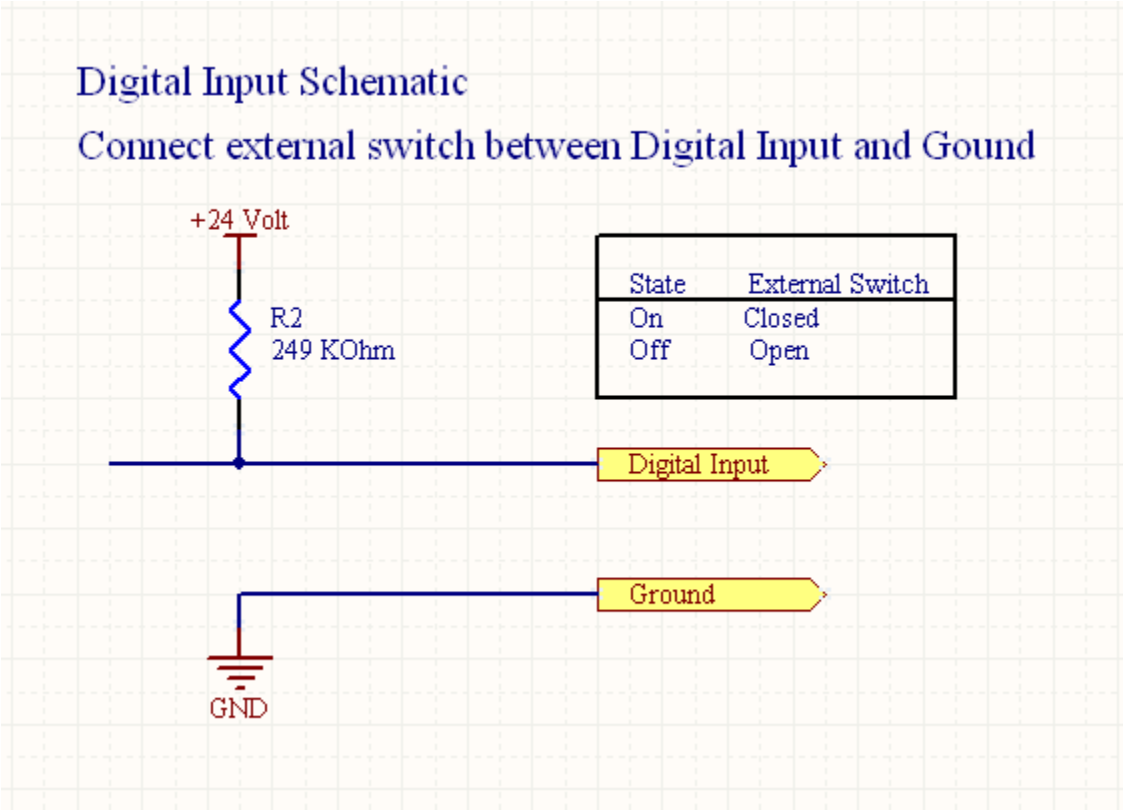
## Digital Output Schematic

The SmartWare shot dispense kit uses high side switches for all digital outputs. When they are on, the module power supply voltage is switched to the output pin. When they are off the power supply voltage goes through a pull up resistor that limits the current to a maximum of the supply voltage divided by 51100 (24 / 51100 = 0.00047 amps).



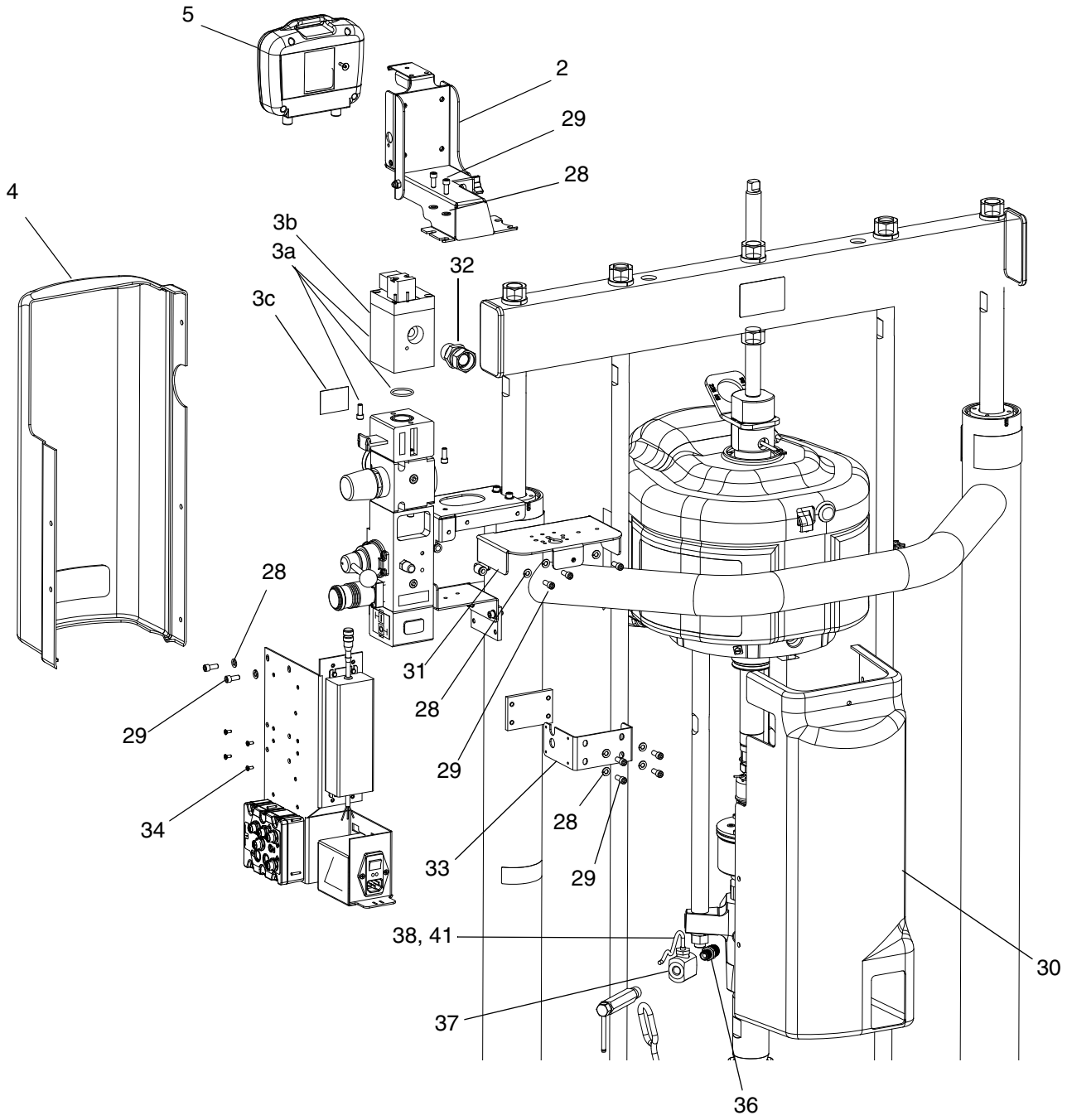
# Digital Input Schematic

The SmartWare shot dispense kit uses low side switches for all digital inputs. The input is off when nothing is connected between the input pin and the ground pin. The input is on when the ground pin is connected to the input pin.

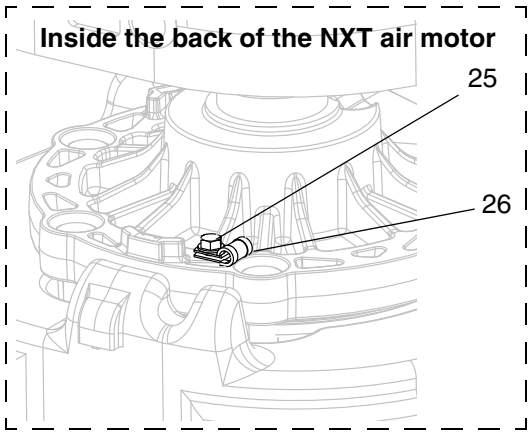


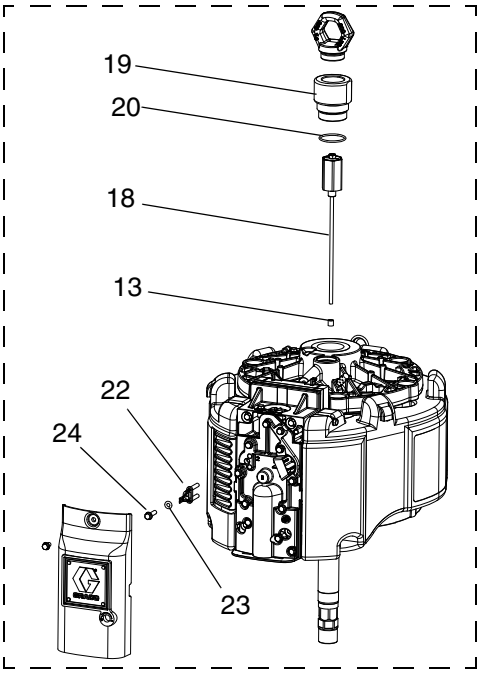
# Parts

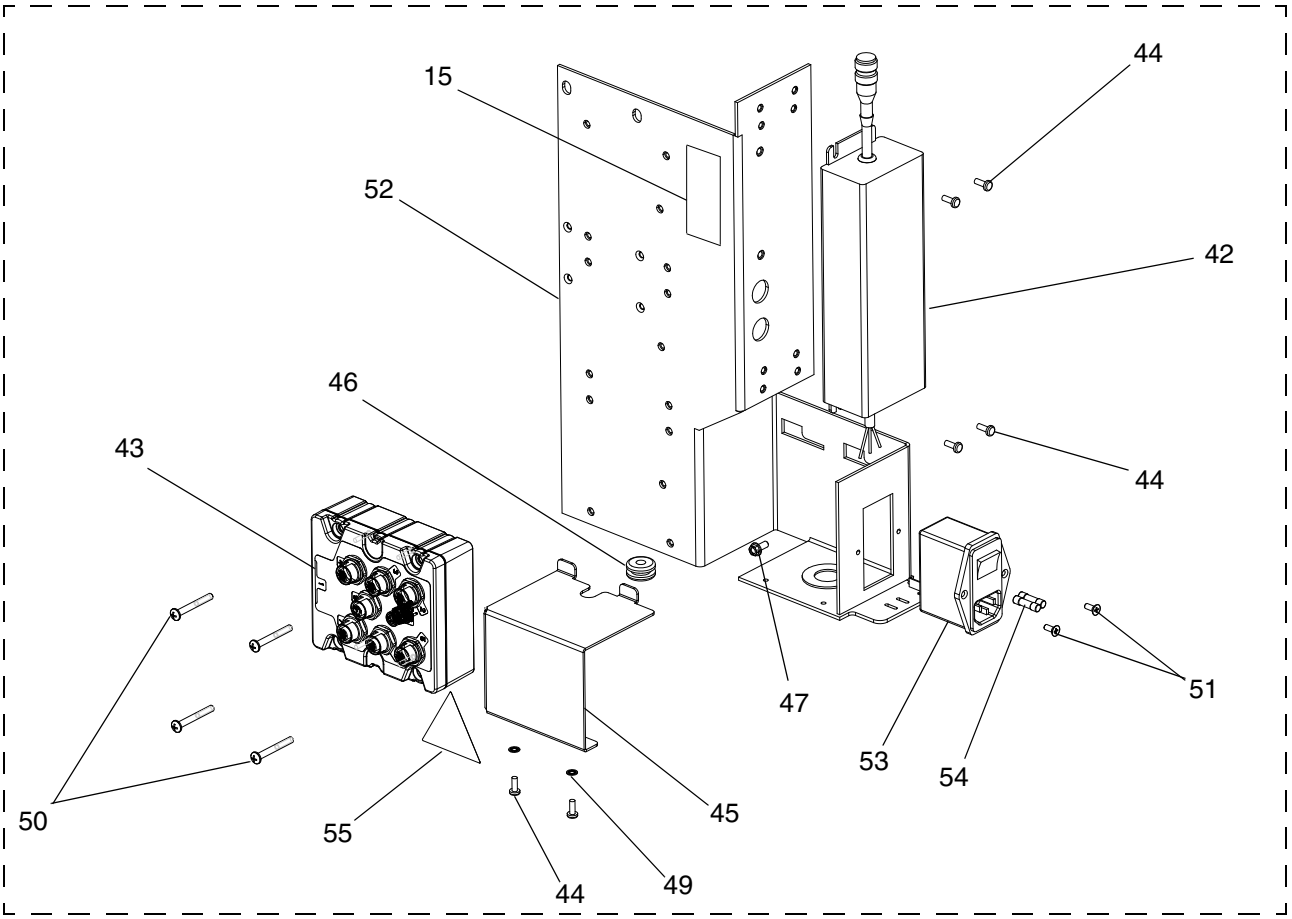
## Kits 262370 and 262372



## Kits 262370 and 262372 (continued)



## Kit 262370 and 262372 Parts

| Ref. | Part | Description | Qty. |
|---|---|---|---|
| 2 | 262408 | BRACKET, subassembly, LCM | 1 |
| 3 | 262412 | VALVE (includes 3a - 3c) | 1 |
| 3a | | SOLENOID, air motor (includes o-ring and screws) | 1 |
| 3b▲ | 189285 | LABEL, caution | 1 |
| 3c | 15V954 | LABEL, valve shutoff, air control | 1 |
| 4 | 262410 | COVER, front, electronics | 1 |
| 5 | 262539 | KIT, module, LCM, display (includes 5a and 5b) | 1 |
| 5a✿ | 262416 | MODULE, LCM, display, bare | 1 |
| 5b | 16G294 | TOKEN, software | 1 |
| 6★ | 121226 | CABLE, CAN, male / female; 0.4m | 1 |
| 7★ | 15T859 | CABLE, assembly, DB25; 10 ft. | 1 |
| 8★ | 15X619 | CABLE, pigtail, linear motor sensor, M12 | 1 |
| 9★ | 15Y051 | CABLE, M12, 8 pin, female/male | 1 |
| 10★ | 122030 | CABLE, GCA, solenoid extension; M12-5P | 3 |
| 11★ | 121806 | CABLE, solenoid | 1 |
| 12★ | 124273 | CONNECTOR, splitter | 2 |
| 13 | 15G747 | MAGNET, linear sensor | 1 |
| 14 | 122622 | CORD, power | 1 |
| 15 | | LABEL, identification | 1 |
| 18 | 287839 | SENSOR, assembly | 1 |
| 19 | 15F772 | ADAPTER, lift ring; 1-9/16 sst | 1 |
| 20 | 108014 | O-RING | 1 |
| 21★ | 113500 | ADHESIVE, anaerobic | 1 |
| 22 | 119700 | SENSOR, reed switch | 1 |
| 23 | 118605 | O-RING | 1 |
| 24 | 120730 | SCREW, machined, hex washer head; 1/4-20 x 1 in. (25 mm) | 1 |
| 25 | 107257 | SCREW, thd forming, hex washer head; 1/4-20 x 1/2 in. (13 mm) | 1 |
| 26 | 120143 | GUIDE, strain relief | 1 |
| 27★ | 16E792 | TOOL, magnet install | 1 |
| 28 | 100016 | WASHER, lock | 11 |
| 29 | 101682 | SCREW, socket head cap | 11 |
| 30 | | COVER, rear | 1 |
| | 277590 | Kit 262370 only | |
| | 277592 | Kit 262372 only | |
| 31 | | BRACKET, light tower | 1 |
| | 255383 | Kit 262370 only | |
| | 15R108 | Kit 262372 only | |
| 32 | 157785 | FITTING, swivel | 1 |
| 33 | | BRACKET, power supply | 1 |
| 34 | 121255 | SCREW, countersunk, 6-32 x 0.38 | 4 |
| 35★ | 103473 | STRAP, tie, wire | 10 |
| 36 | 164856 | ADAPTER | 1 |
| 37 | 16G410 | MANIFOLD, pressure transducer | 1 |
| 38 | 15M669 | SENSOR, pressure, fluid outlet | 1 |
| 40★ | 16F562 | CABLE, pressure sensor extension; M12, male/female, reverse key | 1 |
| 41★ | 111457 | O-RING | 1 |
| 42 | 15M293 | POWER SUPPLY; 24Vdc, 2.5 A, 60W | 1 |
| 43 | 258999 | ENCLOSURE, LCM, breakout box | 1 |
| 44 | 101845 | SCREW, self tapping | 6 |
| 45 | 255634 | COVER, power | 1 |
| 46 | 112738 | GROMMET | 1 |
| 47 | 111593 | SCREW, grounding | 1 |
| 49 | 100272 | WASHER, lock | 2 |
| 50 | 121070 | SCREW, mach; #8x1 0.375 | 4 |
| 51 | 121255 | SCREW, countersunk; 6-32 x 0.38 | 2 |
| 52 | 255636 | BRACKET, mounting, right side | 1 |
| 53 | 121254 | SWITCH, power, 115/250V | 1 |
| 54 | 121261 | FUSE; 250V / 1.2 A | 2 |
| 55▲ | 196548 | LABEL, caution | 1 |
| 65 | 255616 | KIT, bleed valve, short; 262370 only, shipped loose | 1 |
| 66 | 119400 | SEALANT, pipe, sst | 1 |

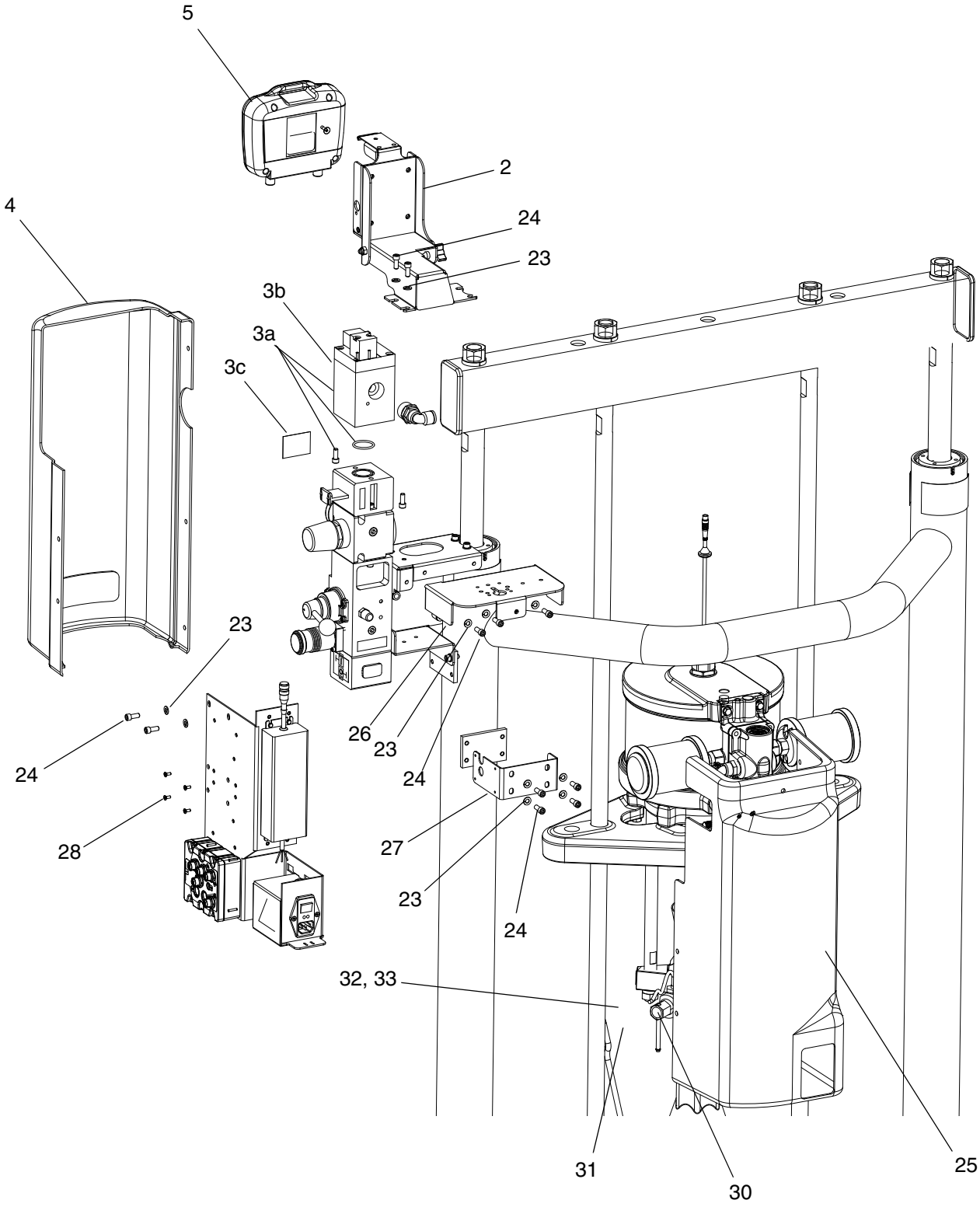
✿ *The bare display module does not have SmartWare software already installed. Use the software upgrade token (5b) to install the SmartWare software before using.*

★ *Not shown.*

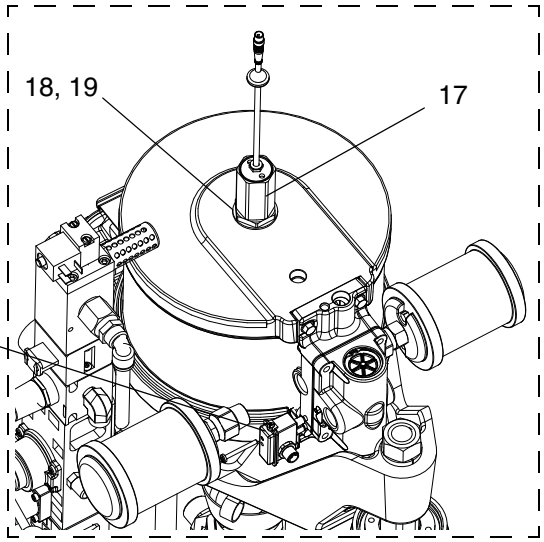
▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

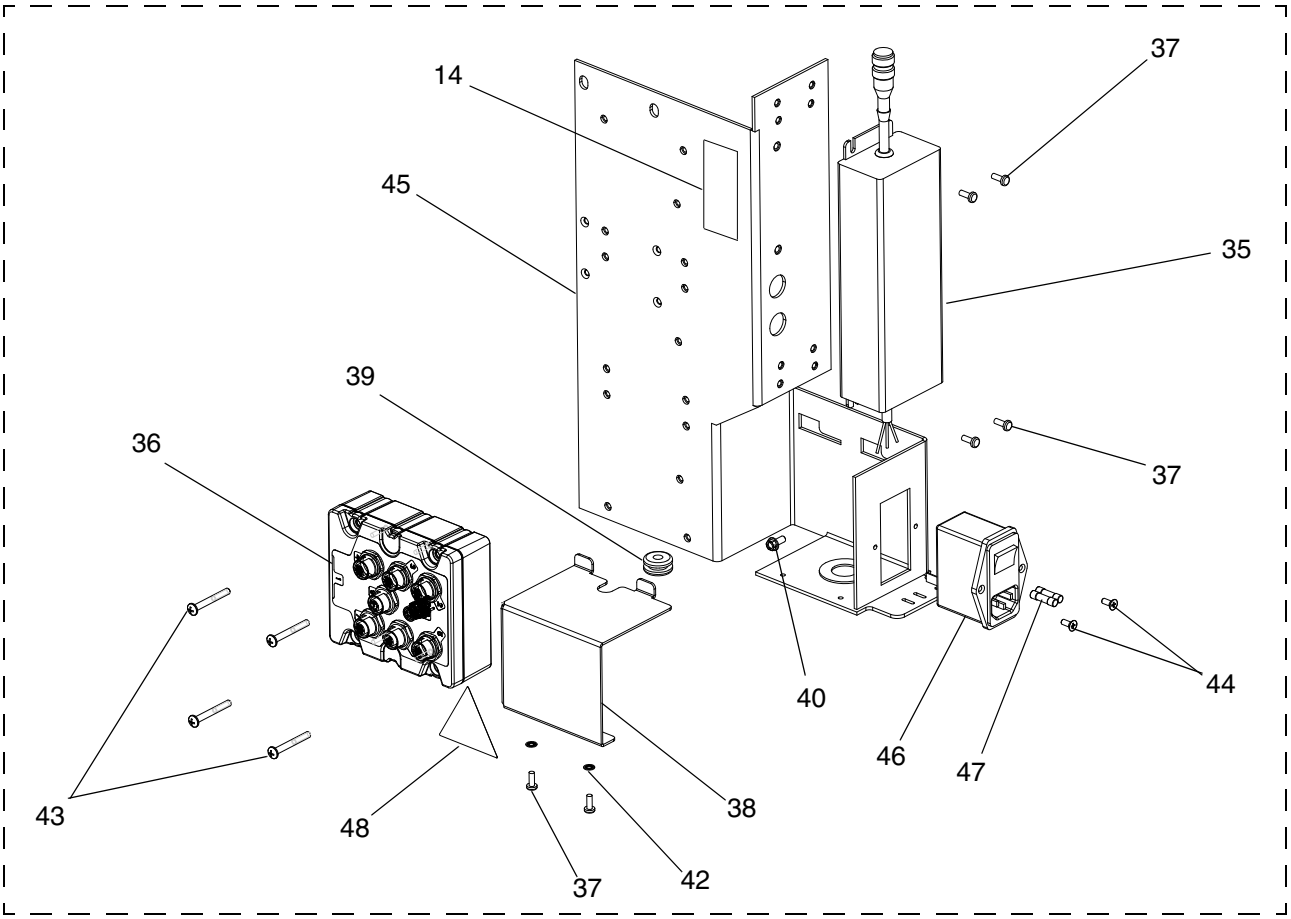
*Reference cable identification table and cable connection diagram, page 21 and page 22.*

# Kit 262371



## Kit 262371 (continued)



## Kit 262371 Parts

| Ref. | Part | Description | Qty. |
|---|---|---|---|
| 2 | 262408 | BRACKET, subassembly, LCM | 1 |
| 3 | 262412 | VALVE (includes 3a - 3c) | 1 |
| 3a | | SOLENOID, air motor (includes o-ring and screws) | 1 |
| 3b▲ | 189285 | LABEL, caution | 1 |
| 3c | 15V954 | LABEL, valve shutoff, air control | 1 |
| 4 | 262410 | COVER, front, electronics | 1 |
| 5 | 262539 | KIT, module, LCM, display (includes 5a and 5b) | 1 |
| 5a✿ | 262416 | MODULE, LCM, display, bare | 1 |
| 5b | 16G294 | TOKEN, software | 1 |
| 6★ | 121226 | CABLE, CAN, male / female, 0.4m | 1 |
| 7★ | 15T859 | CABLE, assembly, DB25,10-ft | 1 |
| 8★ | 15X619 | CABLE, pigtail, linear sensor, M12 | 1 |
| 9★ | 15Y051 | CABLE, M12, 8 PIN, F/M | 1 |
| 10★ | 122030 | CABLE, GCA, solenoid extension; M12-5P | 3 |
| 11★ | 121806 | CABLE, solenoid | 1 |
| 12★ | 124273 | CONNECTOR, splitter | 2 |
| 13★ | 122622 | CORD, power | 1 |
| 14 | | LABEL, identification | 1 |
| 17 | 24C404 | KIT, linear sensor | 1 |
| 18 | 16E067 | BUSHING | 1 |
| 19 | 110782 | O-RING | 1 |
| 20 | 24A032 | SWITCH, reed assy | 1 |
| 21 | 15V719 | SCREW, pan head; 8-32 x 1.50 | 1 |
| 22★ | 16G589 | CABLE, linear sensor and reed | 1 |
| 23 | 100016 | WASHER, lock | 11 |
| 24 | 101682 | SCREW, socket head cap | 11 |
| 25 | 277590 | COVER, rear | 1 |
| 26 | 255383 | BRACKET, light tower | 1 |
| 27 | | BRACKET, power supply | 1 |
| 28 | 121255 | SCREW, countersunk; 6-32 x 0.38 | 4 |
| 29★ | 103473 | STRAP, tie, wire | 10 |
| 30 | 164856 | ADAPTER | 1 |
| 31 | 16G410 | MANIFOLD, pressure transducer | 1 |
| 32 | 15M669 | SENSOR, pressure, fluid outlet | 1 |
| 33 | 111457 | O-RING | 1 |
| 34★ | 16F562 | CABLE, pressure sensor extension; M12, male/female, 2m, reverse key | 1 |
| 35 | 15M293 | POWER SUPPLY; 24Vdc, 2.5 A, 60W | 1 |
| 36 | 258999 | ENCLOSURE, LCM, breakout box | 1 |
| 37 | 101845 | SCREW, self tapping | 6 |
| 38 | 255634 | COVER, power | 1 |
| 39 | 112738 | GROMMET | 1 |
| 40 | 111593 | SCREW, grounding | 1 |
| 42 | 100272 | WASHER, lock | 2 |
| 43 | 121070 | SCREW, mach; #8x1 0.375 | 4 |
| 44 | 121255 | SCREW, countersunk; 6-32 x 0.38 | 2 |
| 45 | 255636 | BRACKET, mounting, right side | 1 |
| 46 | 121254 | SWITCH, power, 115/250V | 1 |
| 47 | 121261 | FUSE; 250V / 1.2 A | 2 |
| 48▲ | 196548 | LABEL, caution | 1 |
| 49 | 119400 | SEALANT, pipe, sst | 1 |

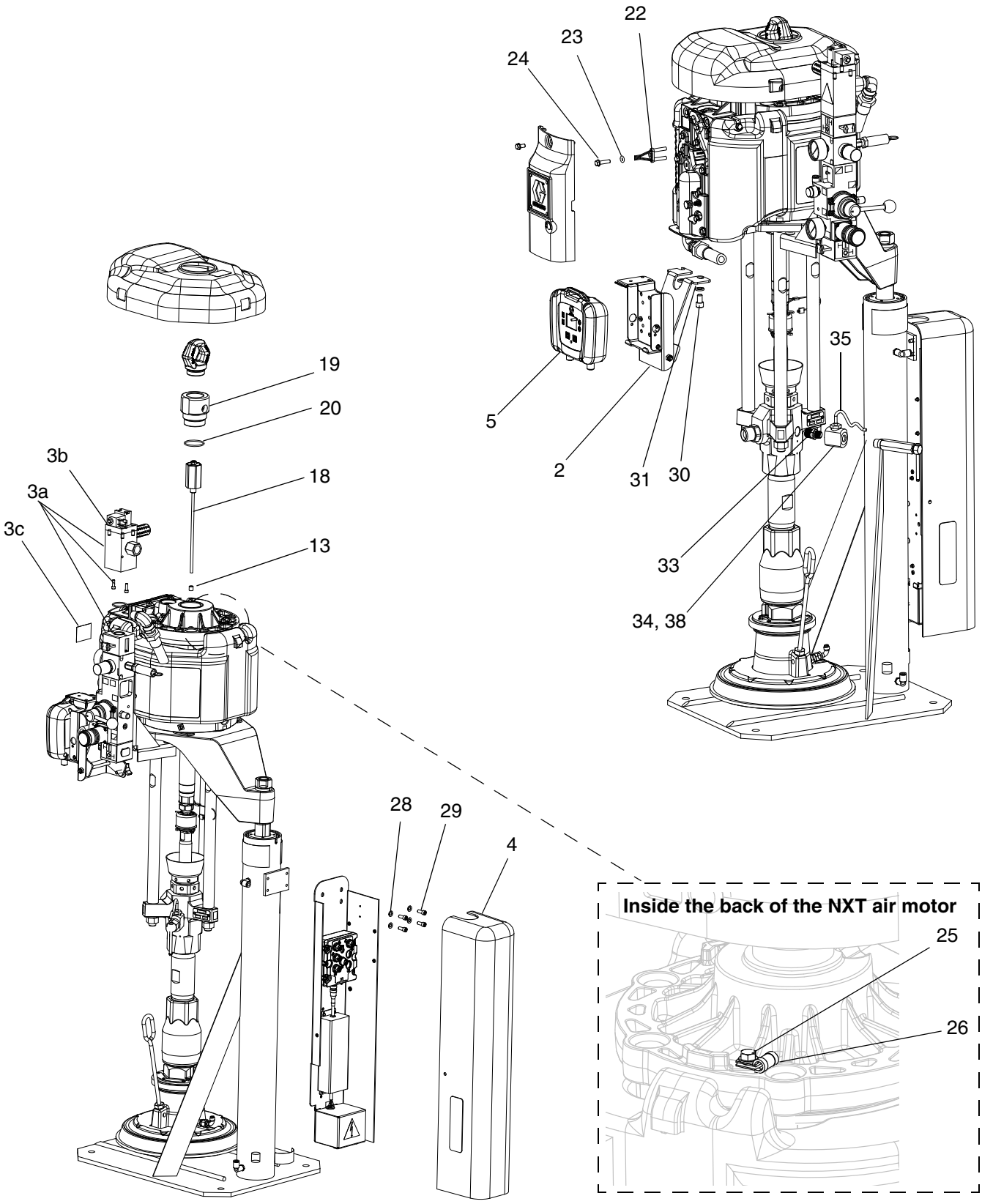
✿ *The bare display module does not have SmartWare software already installed. Use the software upgrade token (5b) to install the SmartWare software before using.*

★ *Not shown.*

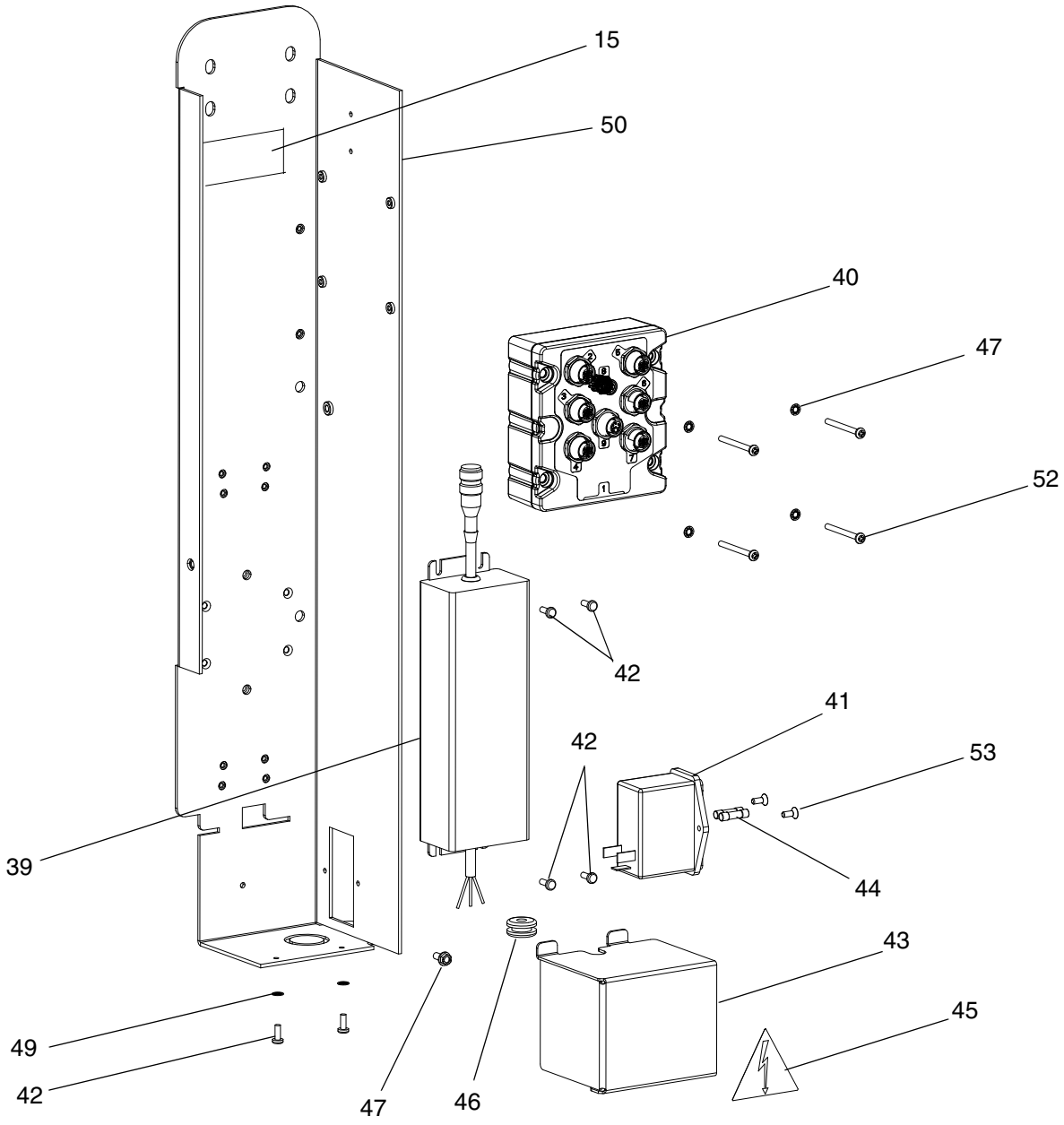
▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

*Reference cable identification table and cable connection diagram, page 27 and page 28.*

# Kit 262373


22
23
24
19
20
18
13
3b
3a
3c
5
2
31
30
35
33
34, 38
28
29
4
Inside the back of the NXT air motor
25
26

## Kit 262373 (continued)



## Kit 262373 Parts

| Ref. | Part | Description | Qty. |
|---|---|---|---|
| 2 | 262430 | BRACKET, subassembly, lcm | 1 |
| 3 | 262432 | VALVE (includes 3a - 3c) | 1 |
| 3a | | SOLENOID, air motor (includes o-ring and screws) | 1 |
| 3b▲ | 189285 | LABEL, caution | 1 |
| 3c | 15V954 | LABEL, valve shutoff, air control | 1 |
| 4 | 262424 | COVER, electronics | 1 |
| 5 | 262539 | KIT, module, LCM, display (includes 5a and 5b) | 1 |
| 5a✿ | 262416 | MODULE, LCM, display, bare | 1 |
| 5b | 16G294 | TOKEN, software | 1 |
| 6★ | 122487 | CABLE, CAN, male / female; 1.5m | 1 |
| 7★ | 15T859 | CABLE, assembly, DB25; 10 ft. | 1 |
| 8★ | 15X619 | CABLE, pigtail, linear motor sensor, M12 | 1 |
| 9★ | 15Y051 | CABLE, M12, 8 pin, female/male | 1 |
| 10★ | 122030 | CABLE, GCA, solenoid extension; M12-5P | 4 |
| 11★ | 121806 | CABLE, solenoid | 1 |
| 12★ | 124273 | CONNECTOR, splitter | 2 |
| 13 | 15G747 | MAGNET, linear sensor | 1 |
| 14★ | 122622 | CORD, power | 1 |
| 15 | | LABEL, identification | 1 |
| 18 | 287839 | SENSOR, assembly | 1 |
| 19 | 15F772 | ADAPTER, lift ring; 1-9/16 sst | 1 |
| 20 | 108014 | O-RING | 1 |
| 21★ | 113500 | ADHESIVE, anaerobic | 1 |
| 22 | 119700 | SENSOR, reed switch | 1 |
| 23 | 118605 | O-RING | 1 |
| 24 | 120730 | SCREW, machined, hex washer head | 1 |
| 25 | 107257 | SCREW, thd forming, hex washer head | 1 |
| 26 | 120143 | GUIDE, strain relief | 1 |
| 27★ | 16E792 | TOOL, magnet install | 1 |
| 28 | 100016 | WASHER, lock | 4 |
| 29 | 101682 | SCREW, socket head cap | 4 |
| 30 | 100133 | WASHER, lock | 2 |
| 31 | 121293 | SCREW, socket head cap | 2 |
| 32★ | 103473 | STRAP, tie, wire | 10 |
| 33 | 164856 | ADAPTER | 1 |
| 34 | 16G410 | MANIFOLD, pressure transducer | 1 |
| 35 | 15M669 | SENSOR, pressure, fluid outlet | 1 |
| 37★ | 16F562 | CABLE, pressure sensor extension; M12, male/female, 2m, reverse key | 1 |
| 38 | 111457 | O-RING | 1 |
| 39 | 15M293 | POWER SUPPLY; 24Vdc, 2.5 A, 60W | 1 |
| 40 | 258999 | ENCLOSURE, LCM, breakout box | 1 |
| 41 | 121254 | SWITCH, power; 115/250V | 1 |
| 42 | 101845 | SCREW, self-tapping | 6 |
| 43 | 255634 | COVER, power | 1 |
| 44 | 121262 | FUSE; 250V / 1.2 A | 2 |
| 45▲ | 196548 | LABEL, caution | 1 |
| 46 | 112738 | GROMMET | 1 |
| 47 | 111593 | SCREW, grounding | 1 |
| 49 | 100272 | WASHER, lock | 6 |
| 50 | 256979 | ENCLOSURE, power supply | 1 |
| 52 | 117683 | SCREW, mach, pan head | 4 |
| 53 | 121255 | SCREW, countersunk; 6-32 x 0.38 | 2 |
| 54 | 119400 | SEALANT, pipe, sst | 1 |

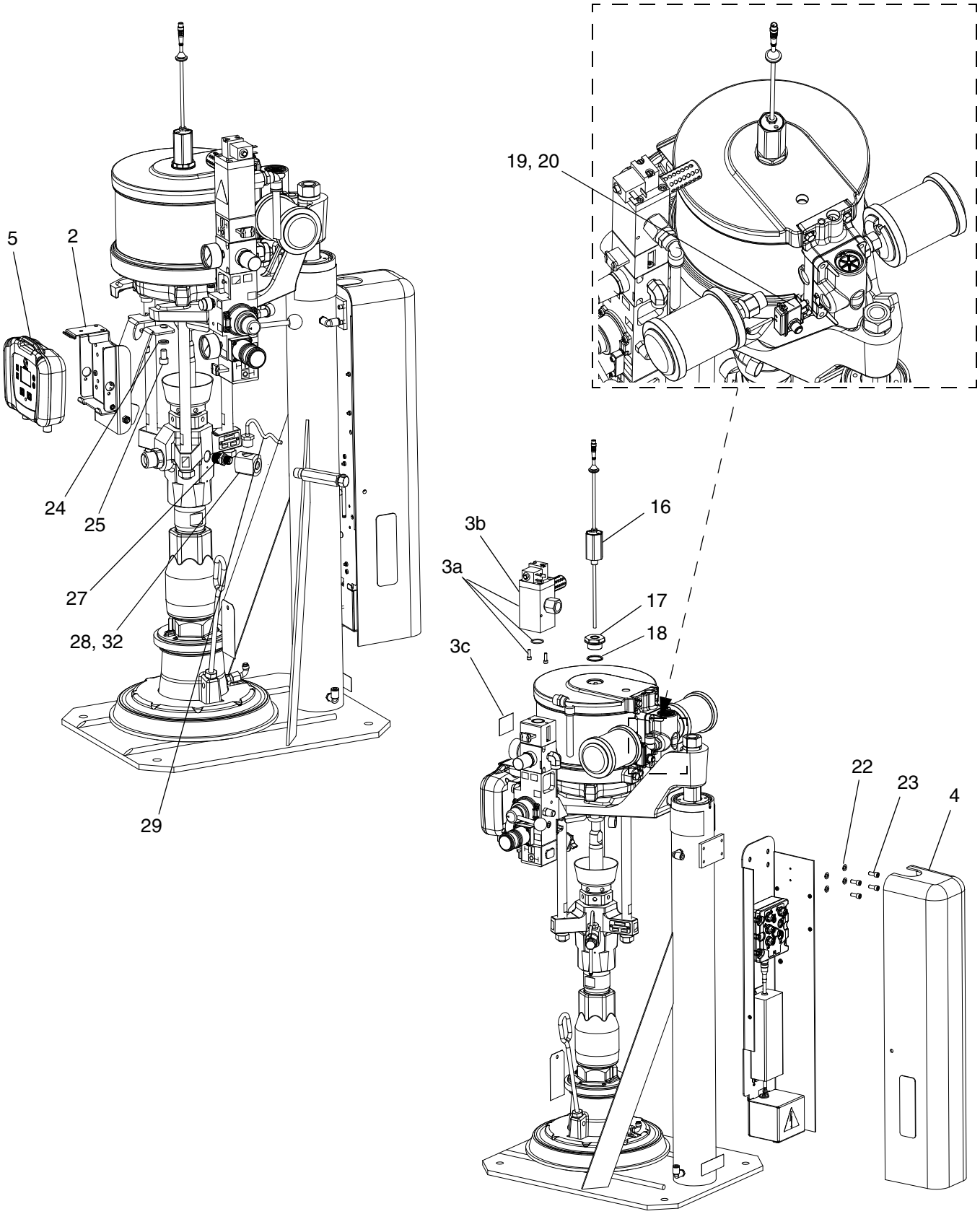
✿ *The bare display module does not have SmartWare software already installed. Use the software upgrade token (5b) to install the SmartWare software before using.*

★ *Not shown.*

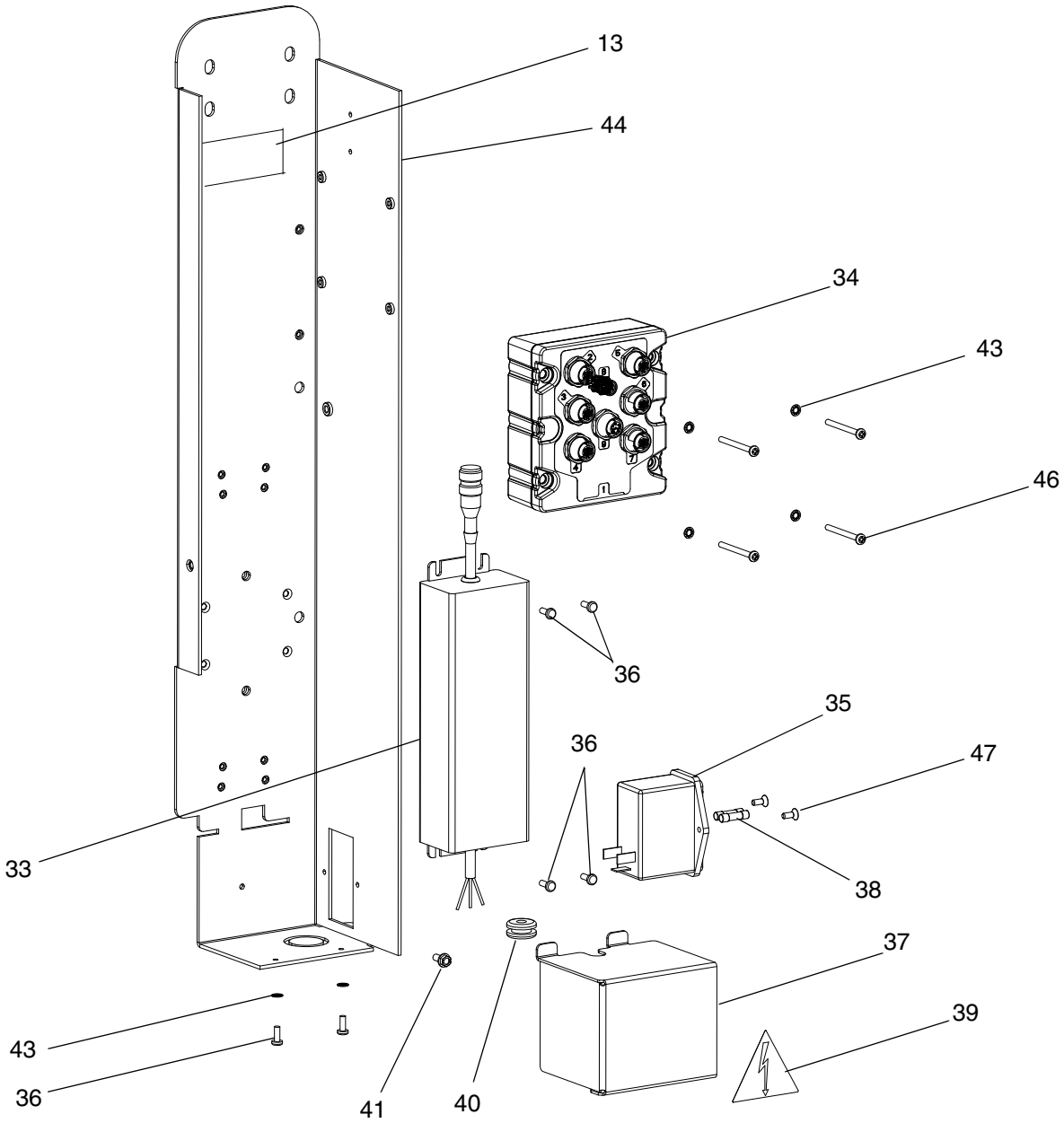
▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

*Reference cable identification table and cable connection diagram, page 34 and page 35.*

# Kit 262374



## Kit 262374 (continued)



## Kit 262374 Parts

| Ref. | Part | Description | Qty. |
|---|---|---|---|
| 2 | 262430 | BRACKET, subassembly, LCM | 1 |
| 3 | 262432 | VALVE (includes 3a - 3c) | 1 |
| 3a | | SOLENOID, air motor (includes o-ring and screws) | 1 |
| 3b▲ | 189285 | LABEL, caution | 1 |
| 3c | 15V954 | LABEL, valve shutoff, air control | 1 |
| 4 | 262424 | COVER, front, electronics | 1 |
| 5 | 262539 | KIT, module, LCM, display (includes 5a and 5b) | 1 |
| 5a✿ | 262416 | MODULE, LCM, display, bare | 1 |
| 5b | 16G294 | TOKEN, software | 1 |
| 6★ | 122487 | CABLE, CAN, male/female; 1.5m | 1 |
| 7★ | 15T859 | CABLE, assembly, DB25; 10ft | 1 |
| 8★ | 15Y051 | CABLE, M12, 8 PIN, female/male | 1 |
| 9★ | 122030 | CABLE, GCA, solenoid extension; M12-5P | 4 |
| 10★ | 121806 | CABLE, solenoid | 1 |
| 11★ | 124273 | CONNECTOR, splitter | 2 |
| 12★ | 122622 | CORD, power | 1 |
| 13 | | LABEL, identification | 1 |
| 16 | 24C404 | KIT, linear sensor | 1 |
| 17 | 16E067 | BUSHING | 1 |
| 18 | 110782 | O-RING | 1 |
| 19 | 24A032 | SWITCH, reed assy | 1 |
| 20 | 15V719 | SCREW, pan head; 8-32 x 1.50 | 1 |
| 21★ | 16G589 | CABLE, linear sensor and reed switch | 1 |
| 22 | 100016 | WASHER, lock | 4 |
| 23 | 101682 | SCREW, socket head cap | 4 |
| 24 | 100133 | WASHER, lock | 2 |
| 25 | 121293 | SCREW, socket head cap | 2 |
| 26★ | 103473 | STRAP, tie, wire | 10 |
| 27 | 164856 | ADAPTER | 1 |
| 28 | 16G410 | MANIFOLD, pressure transducer | 1 |
| 29 | 15M669 | SENSOR, pressure, fluid outlet | 1 |
| 31★ | 16F562 | CABLE, pressure sensor extension; M12, male/female, 2m, reverse key | 1 |
| 32 | 111457 | O-RING | 1 |
| 33 | 15M293 | POWER SUPPLY; 24Vdc, 2.5 A, 60W | 1 |
| 34 | 258999 | ENCLOSURE, LCM, breakout box | 1 |
| 35 | 121254 | SWITCH, power; 115/250V | 1 |
| 36 | 101845 | SCREW, self-tapping | 6 |
| 37 | 255634 | COVER, power | 1 |
| 38 | 121262 | FUSE; 250V / 1.2 A | 2 |
| 39▲ | 196548 | LABEL, caution | 1 |
| 40 | 112738 | GROMMET | 1 |
| 41 | 111593 | SCREW, grounding | 1 |
| 43 | 100272 | WASHER, lock | 6 |
| 44 | 256979 | ENCLOSURE, power supply | 1 |
| 46 | 117683 | SCREW, mach, pan head | 4 |
| 47 | 121255 | SCREW, countersunk; 6-32 x 0.38 | 2 |
| 48 | 119400 | SEALANT, pipe, sst | 1 |

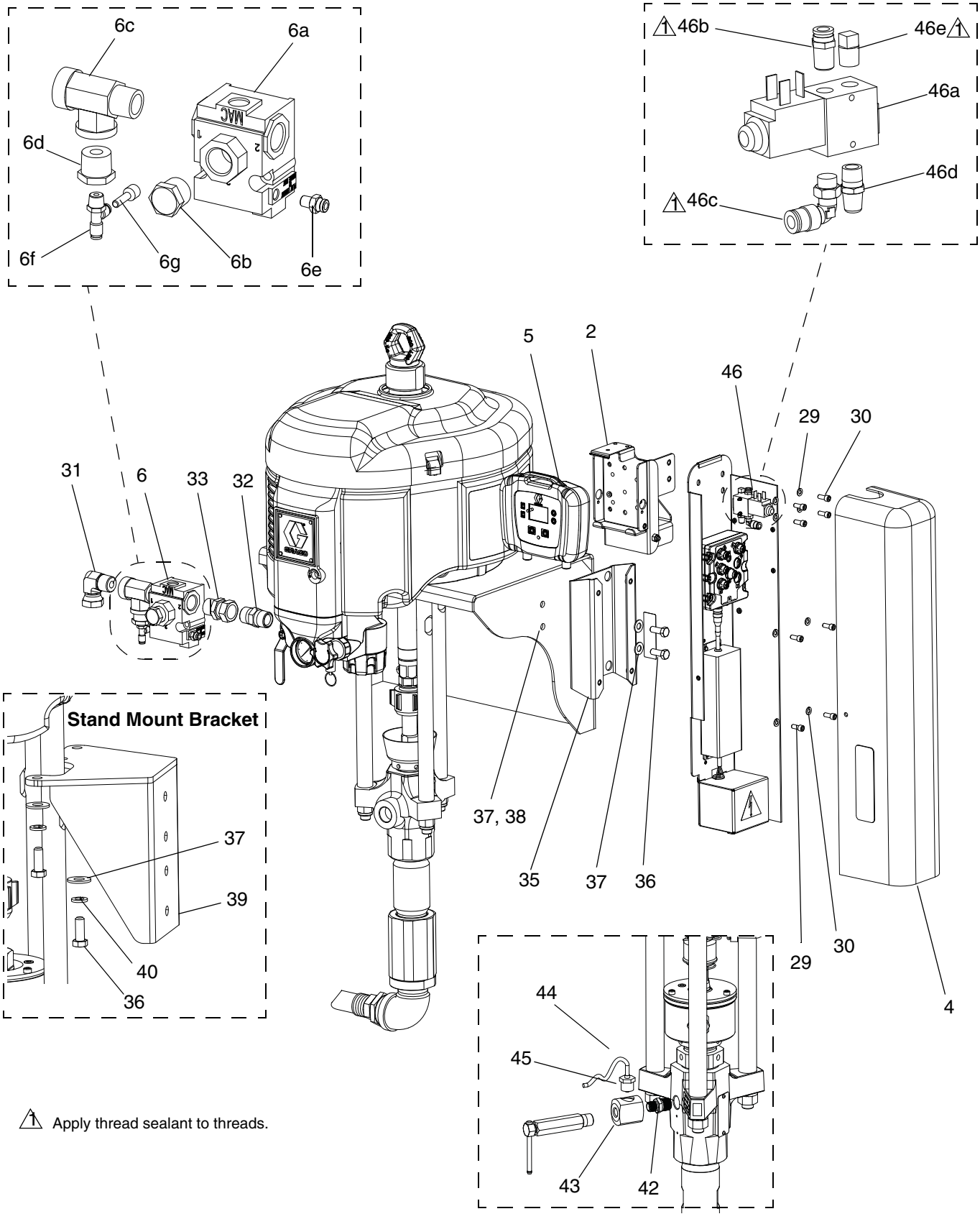
✿ *The bare display module does not have SmartWare software already installed. Use the software upgrade token (5b) to install the SmartWare software before using.*

★ *Not shown.*

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

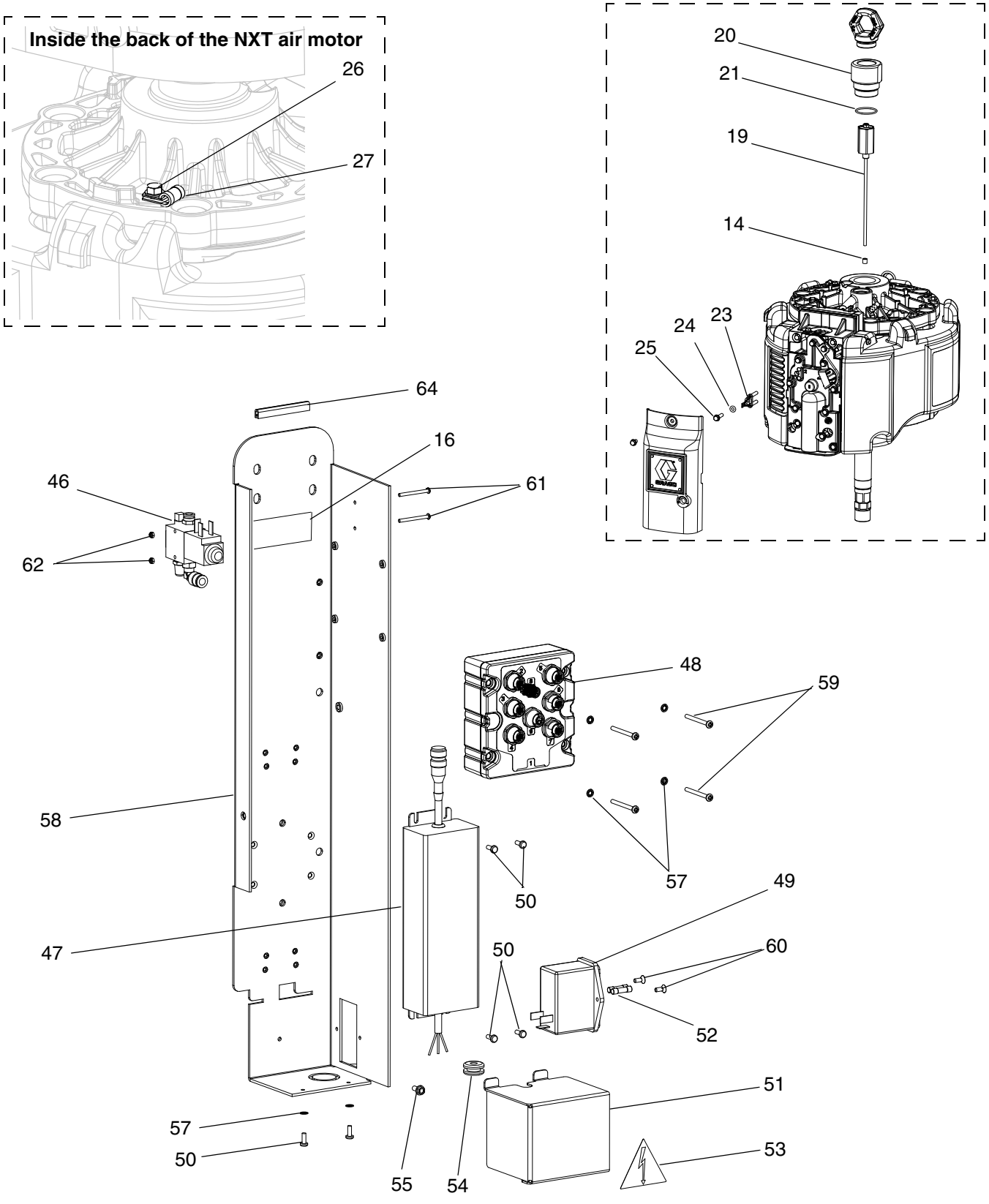
*Reference cable identification table and cable connection diagram, page 40 and page 41.*

# Kit 262375




Apply thread sealant to threads.

## Kit 262375 (continued)



## Kit 262375 Parts

| Ref. | Part | Description | Qty. |
|---|---|---|---|
| 2 | 262420 | BRACKET, subassembly, LCM | 1 |
| 4 | 262424 | COVER, electronics | 1 |
| 5 | 262539 | KIT, module, LCM, display (includes 5a and 5b) | 1 |
| 5a✿ | 262416 | MODULE, LCM, display, bare | 1 |
| 5b | 16G294 | TOKEN, software | 1 |
| 6 | | VALVE, subassembly (includes 6a - 6g) | 1 |
| 6a | C59752 | VALVE, pneumatic, 3-way | 1 |
| 6b | 111530 | MUFFLER | 1 |
| 6c | 111337 | FITTING, tee, street | 1 |
| 6d | 100615 | BUSHING, hex steel | 1 |
| 6e | C19405 | FITTING, connector, male | 1 |
| 6f | C20365 | FITTING, tee, air | 1 |
| 6g | 16F609 | PLUG, seal; 1/4 tube | 1 |
| 7★ | 121226 | CABLE, CAN, male / female; 0.4m | 1 |
| 8★ | 15T859 | CABLE, assembly, DB25; 10 ft. | 1 |
| 9★ | 15X619 | CABLE, pigtail, linear motor sensor, M12 | 1 |
| 10★ | 15Y051 | CABLE, M12, 8 pin, female/male | 1 |
| 11★ | 122030 | CABLE, GCA, solenoid extension; M12-5P | 1 |
| 12★ | 121806 | CABLE, solenoid | 1 |
| 13★ | 124273 | CONNECTOR, splitter | 1 |
| 14 | 15G747 | MAGNET, linear sensor | 1 |
| 15★ | 122622 | CORD, power | 1 |
| 16 | | LABEL, identification | 1 |
| 19 | 287839 | SENSOR, assembly | 1 |
| 20 | 15F772 | ADAPTER, lift ring; 1-9/16 sst | 1 |
| 21 | 108014 | O-RING | 1 |
| 22★ | 113500 | ADHESIVE, anaerobic | 1 |
| 23 | 119700 | SENSOR, reed switch | 1 |
| 24 | 118605 | O-RING | 1 |
| 25 | 120730 | SCREW, machined, hex washer head | 1 |
| 26 | 107257 | SCREW, thd forming, hex washer head | 1 |
| 27 | 120143 | GUIDE, strain relief | 1 |
| 28★ | 16E792 | TOOL, magnet install | 1 |
| 29 | 100016 | WASHER, lock | 8 |
| 30 | 101682 | SCREW, socket head cap | 8 |
| 31 | 160327 | FITTING, union, adapter; 90 deg. | 1 |
| 32 | 119992 | FITTING, pipe, nipple; 3/4 x 3/4 npt | 1 |
| 33 | 157785 | FITTING, swivel | 1 |
| 34★ | C12509 | TUBE, nylon, round; 10 ft. | - |
| 35 | | BRACKET, assembly, adapter | 1 |
| 36 | 100101 | SCREW, cap, hex head | 4 |
| 37 | 100731 | WASHER | 6 |
| 38 | 101566 | NUT, lock | 2 |
| 39 | l | BRACKET, controls mount | 1 |
| 40 | 100133 | WASHER, lock | 2 |
| 41★ | 103473 | STRAP, tie, wire | 10 |
| 42 | 164856 | ADAPTER | 1 |
| 43 | 16G410 | MANIFOLD, pressure transducer | 1 |
| 44 | 15M669 | SENSOR, pressure, fluid outlet | 1 |
| 45 | 111457 | O-RING | 1 |
| 46 | | VALVE, subassembly (includes 46a - 46e) | 1 |
| 46a | 198446 | VALVE, dispense, closer | 1 |
| 46b | C19405 | FITTING, connector, male | 1 |
| 46c | 112698 | ELBOW, male, swivel | 1 |
| 46d | C06061 | MUFFLER | 1 |
| 46e | 100403 | PLUG, pipe | 1 |
| 47 | 15M293 | POWER SUPPLY; 24 Vdc, 2.5 A, 60W | 1 |
| 48 | 258999 | MODULE, LCM, breakout box | 1 |
| 49 | 121254 | SWITCH, power; 115/250V | 1 |
| 50 | 101845 | SCREW, self-tapping | 6 |
| 51 | 255634 | COVER, power | 1 |
| 52 | 121261 | FUSE; 250 V / 1.2 A | 2 |
| 53▲ | 196548 | LABEL, caution | 1 |
| 54 | 112738 | GROMMET | 1 |
| 55 | 111593 | SCREW, grounding | 1 |
| 57 | 100272 | WASHER, lock | 6 |
| 58 | 256979 | ENCLOSURE, power supply | 1 |
| 59 | 117683 | SCREW, machined, pan head | 4 |
| 60 | 121255 | SCREW, countersunk; 6-32 x 0.38 | 2 |
| 61 | 116798 | SCREW, machined, pan head; 4 x 1.25 | 2 |
| 62 | C27076 | NUT | 2 |
| 64 | 114225 | TRIM, edge protection; 0.19 ft. | - |
| 65 | 119400 | SEALANT, pipe, sst | 1 |

✿ *The bare display module does not have SmartWare software already installed. Use the software upgrade token (5b) to install the SmartWare software before using.*

★ *Not shown.*

▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

*Reference cable identification table and cable connection diagram, page 46 and page 47.*

# Appendix A - User Interface Display

## Display Overview

The display is divided into two main functions: Setup mode and Run mode.

### Setup Mode Functions

Setup mode functions enable users to:

- set units of measurement displayed on screen;
- program shot size;
- program shot sequence;
- set system password;
- modify pump configurations;
- enable/disable pump functions;
- enable/disable error codes;
- set pump runaway;
- set drum size;
- view or modify system and maintenance totalizers;
- view or clear shot totalizers;
- view error totalizers;
- and perform calibration.

### Run Mode Functions

Run mode functions enable users to:

- change run mode between shot, sequence, manual, and park;
- set shot number;
- record shot volume or time;
- switch air valve on and off;
- view shot progress;
- dispense material shots;
- clear errors;
- and fill material drum.

## Display Details

### Power Up Screen

The following screen appears when the display module is powered up. It remains on while the display module runs through initialization and establishes communication with other components in the system.

### Soft Keys

Icons to the left of the soft keys indicate which mode or action is associated with each soft key. Soft keys that do not have an icon to the left of them are not active in the current screen.

#### Enter/Exit Screens

In screens that have editable fields, press to access the fields and make changes. When changes are complete press to exit edit mode.

### Navigation within Screens

Press to open drop-down menus and select data to edit. Also, press to enter changes or make a selection.

Press to navigate to a new screen and to navigate up and down within a screen. Also, press to move between fields within a drop-down menu, and to increment or decrement numbers within a field.

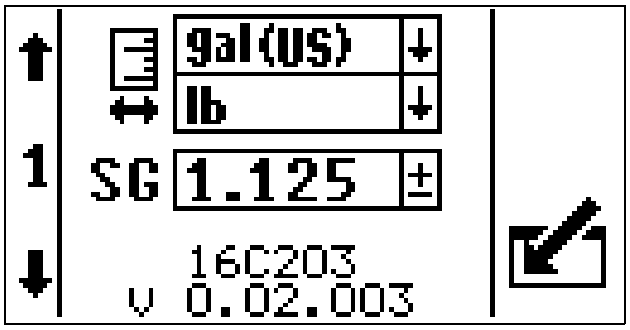
# Setup Mode Details

Setup mode screens enable users to view or modify system configuration data. Users can set units, set shot sizes, program shot sequences, set the password, select specific pump sizes, adjust pump configuration, setup errors, and view totalizers.

## Setup Screen 1 - Units

Setup screen 1 enables users to set units of measurement that will display on other screens. This screen also uses the specific gravity of the material being dispensed to convert units. Additionally, this screen displays the software number and version. Refer to the following table for more information.

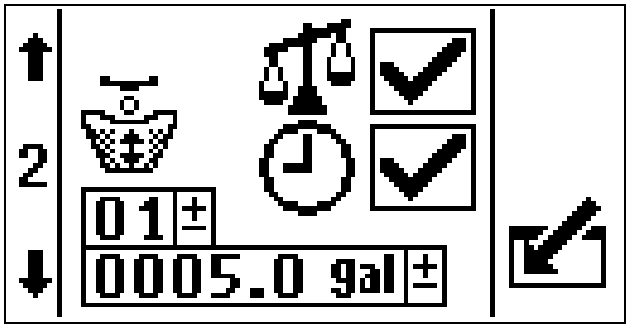
| Icon | Function |
|---|---|
| | Units of Measure<br>Select units of measurement for material volume or material weight. |
| SG | Specific Gravity<br>The system uses the material's specific gravity that is entered in the field to convert volume units (cc) to weight units (grams). The weight units will display on other screens if the Shot Weight field on the Shot Size screen is enabled. |




## Setup Screen 2 - Shot Size

Setup screen 2 enables users to program up to 25 shots (1 – 25). Each shot number can be defined so that the system will dispense the predetermined quantity of material when the shot number is selected and a shot is initiated. Refer to the following table for more information.

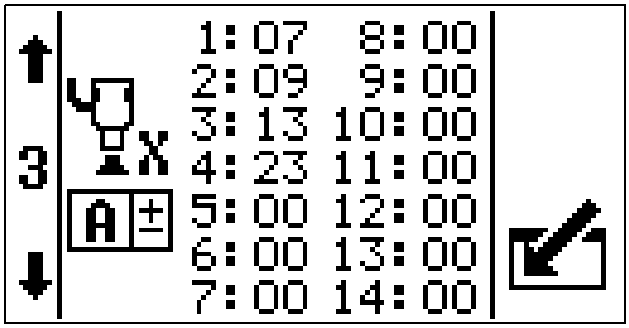
| Icon | Function |
|---|---|
| | Set Volume/Weight<br>Select shot number. Set weight/volume of specific material for the shot. Weight units are displayed when the Shot Weight icon is checked. Volume units are displayed when the Shot Weight icon is unchecked. |
| | Shot Weight<br>Configure system to use shot weight (if checked) or shot volume (if unchecked). |
| | Shot Time<br>Displays shot time (if checked) or shot volume/weight (if unchecked). |



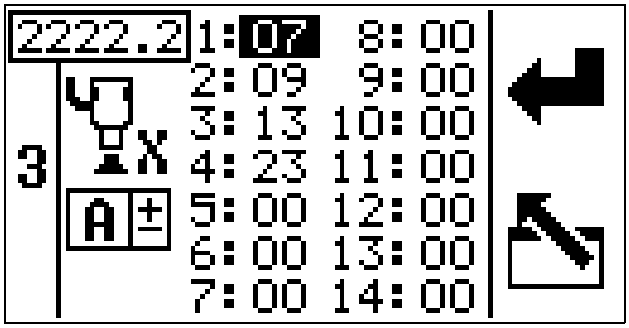
## Setup Screen 3 - Shot Sequence

Setup screen 3 enables users to program up to five sequences (A – E). Each sequence can have up to 14 steps and each step can be one of the possible 25 shots (programmed from the Shot Size setup screen). If any sequence contains either an undefined shot or one of the positions is undefined, no material will be dispensed when that shot is taken. Refer to the following table for more information.

| Icon | Function |
|---|---|
| | Set Shot<br>Set number of shots for each step in the sequence. |
| | Shot Sequence<br>Select shot sequence letter (A-E). |
| 2222.2 | Shot Volume<br>The shot volume box displays the volume of the selected (highlighted) shot number. |



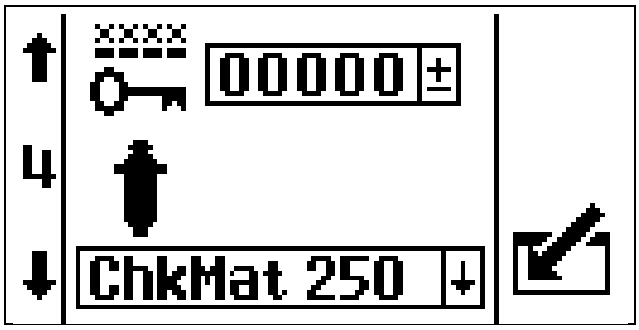

Shot sequence screen shown with shot number selected, which also displays the shot volume box.




## Setup Screen 4 - Password and Pump

Setup screen 4 enables users to set a password and select the pump size used by the specific system. Refer to the following table for more information.

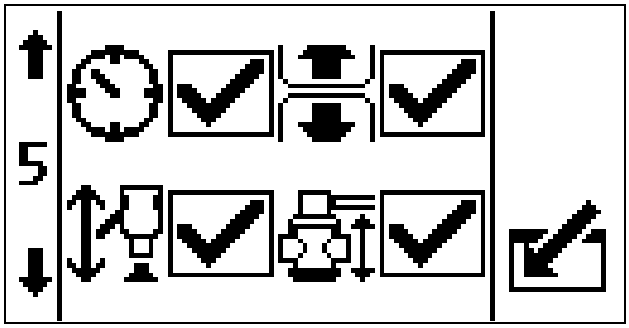
| Icon | Function |
|---|---|
| | Password<br>The setup screens can be protected by a password to restrict their accessibility. See **Set Password**, page 56, for more information and instructions for setting a password. |
| | Pump<br>Select pump used on the system. |



## Setup Screen 5 - Enable/Disable Pump Functions

Setup screen 5 enables users to enable and disable functions that directly relate to pump activity. Disabling functions in this screen will prevent them from being used in run mode. Refer to the following table for more information.

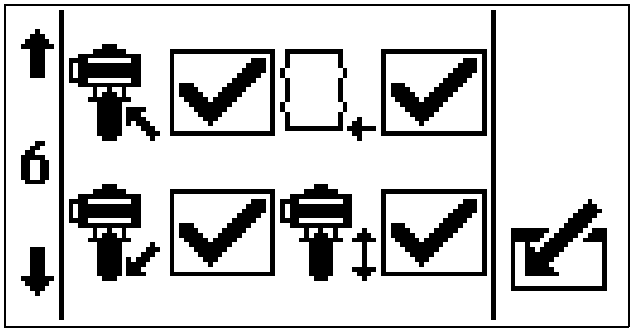
| Icon | Function |
|---|---|
| | Air Pressure After Shot<br>Check the box to have the air pressure remain **on** after a shot completes. Or uncheck the box to have the air pressure turn **off** after a shot completes. |
| | Shot Switch Tap Mode<br>Change shot switch mode. There are two modes: turn switch on and off (tap mode) or turn switch on and hold (hold mode). Tap mode is enabled when field is checked. Hold mode is enabled when field is not checked. |
| | Shot Editing<br>Enables shot key on display, and the editing of the shot number or operation mode. |
| | Changeover Solenoid<br>If checked, the changeover solenoid function is enabled. |




## Setup Screen 6 - Enable/Disable Errors

Setup screen 6 enables users to enable and disable specific error codes that will be issued if an alarm, advisory, or deviation is detected in the system. See **Errors**, page 66, for an explanation of each error code. Refer to the following table for more information.

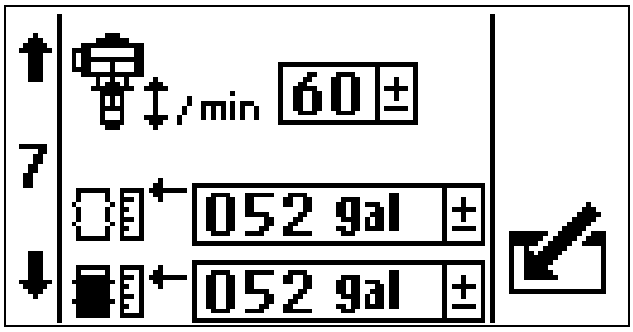
| Icon | Function |
|---|---|
| | Diving Up Deviation<br>Indicates the pump is cavitating during the bottom changeover. |
| | Diving Down Deviation<br>Indicates the pump is cavitating during the top changeover. |
| | Empty Drum Alarm<br>If checked, the empty drum alarm is enabled.<br>If unchecked, the empty drum advisory is enabled. |
| | Pump Runaway Error<br>Enable or disable pump runaway error. |



## Setup Screen 7 - Setup Pump Runaway and Drum Size

Setup screen 7 enables users to set the pump runaway cycle rate, drum size, and drum fill volume. Refer to the following table for more information.

| Icon | Function |
|---|---|
| | Pump Runaway Cycle Rate<br>Set the pump runaway cycle rate, which if surpassed will issue a pump runaway error. Graco recommends setting the cycle rate to 60 or less. Choose a value that is just above the maximum cycle rate of the application. |
| | Drum Size<br>Enter the size of the material supply drum. |
| | Drum Fill Volume<br>Enter the exact volume of the material in the supply drum. If unknown, contact the supplier for the exact volume. This value is used to determine the remaining volume in the supply drum. |




## Setup Screen 8 - Grand, Batch, and Maintenance Totalizer

Setup screen 8 enables users to view the grand and batch totals for the pump. This screen also enables users to set maintenance setpoint amount for the pump and dosing valve.

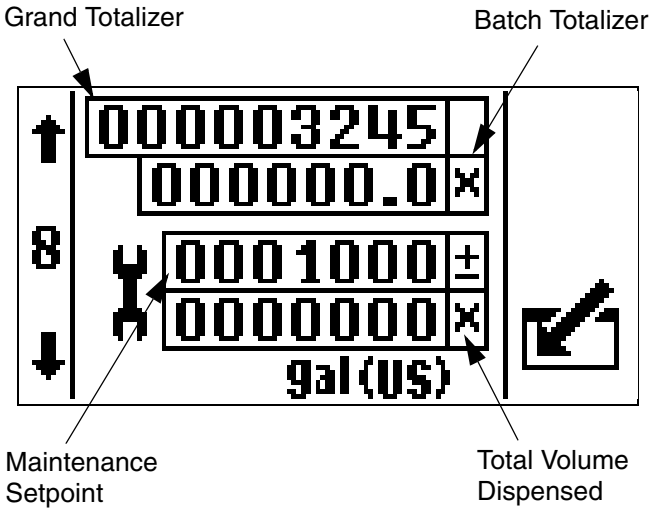
The units of measurement are displayed in the corner, and in the units of measurement selected in the Setup Units screen.

### Grand and Batch Totalizers

The grand totalizer tracks and displays the amount of material the system has dispensed during its lifetime. The batch totalizer tracks and displays the amount of material since the last user reset.

### Maintenance Totalizers

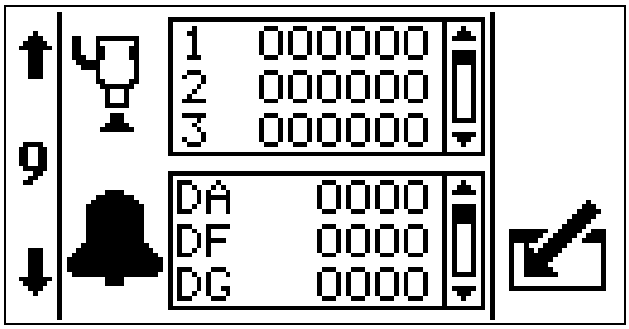
Set the amounts of material moved through the pump and dosing valve that will result in a maintenance advisory when the Total Volume Dispensed exceeds the Maintenance Setpoint. Clearing the Total Volume Dispensed will clear the advisory.



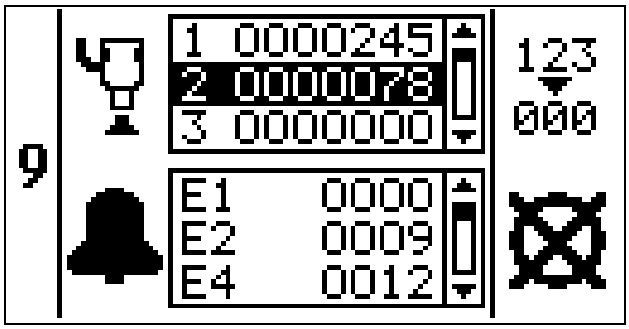
## Setup Screen 9 - Shot and Error Totalizer

Setup screen 9 enables users to view the shot and error totals. Refer to the following table for more information.

| Icon | Function |
|---|---|
| | Shot Totalizer<br>Records and displays the number of times each shot number has occurred. |
| | Error Totalizer<br>Records and displays the number of times each error type has occurred. |



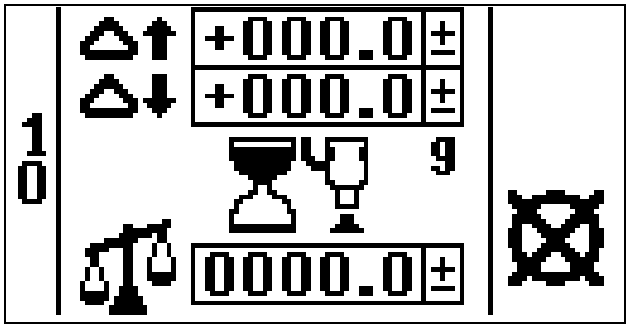

Shot and error totalizer screen shown with shot number highlighted, which enables the user to clear a shot by then pressing 123/000 .




## Setup Screen 10 - Calibration

Setup screen 10 enables users to start the calibration process for top changeover, bottom changeover, and shot weight. Refer to the following table for more information.

| Icon | Function |
|---|---|
| | Material Delta<br>Fields are updated after four shot weights are entered into the Weight box. |
| | Weight<br>Used to enter the weight of the shot. |
| | Timer<br>Displays when the calibration process starts. |
| | Shot Calibration<br>Displays when calibrating a shot. |
| | Pump Calibration<br>Displays when calibrating the pump. |

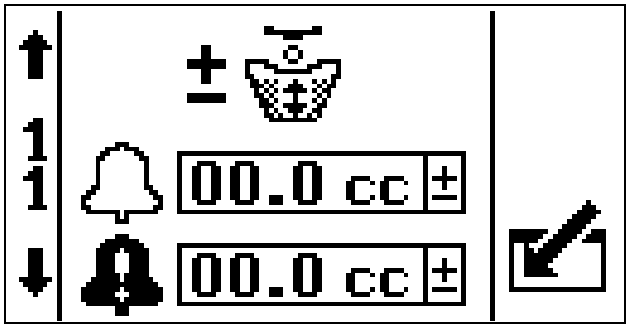


## Setup Screen 11 - Shot Accuracy Errors

Setup screen 11 enables users to set the shot volume difference from the shot setpoint that will cause an advisory or alarm. Refer to the following table for more information.

| Icon | Function |
|---|---|
| | Advisory<br>If the final shot volume is greater or less than the shot setpoint by the value entered in this field, an advisory is generated. |
| | Alarm<br>If the final shot volume is greater or less than the shot setpoint by the value entered in this field, an alarm is generated. |

**NOTE:** If either the advisory field or alarm field is set to zero, the error is disabled.



# Run Mode Details

Run mode enables users to perform material shots, adjust shot number, view shot volume/time, monitor pump movement, and view shot time. Users can access the Information screen from the run screen, which enables them to clear errors and fill material drums.

The system always starts with the run screen. See **Operation**, page 62, for instructions on using the Run screen.

## Operation Modes

Users can perform material shots using one of three operation modes: Shot, Sequence, or Manual.

| Mode | Function |
|---|---|
| | Shot Mode<br>Enables users to repeatedly dispense 1 of 25 shots. |
| | Sequence Mode<br>Enables users to dispense a sequence of shots in a specified order. |
| | Manual Mode<br>Enables users to manually dispense shots. |
| | Park Mode<br>Runs pump to bottom of the stroke, and then disables the system. |

## Air Valve On/Off

Press the Air On/Off button to turn the air valve on and off. If the Air Pressure After Shot field is checked on the screen 5 (Enable/Disable Pump Functions screen), the air will remain on after the shot.

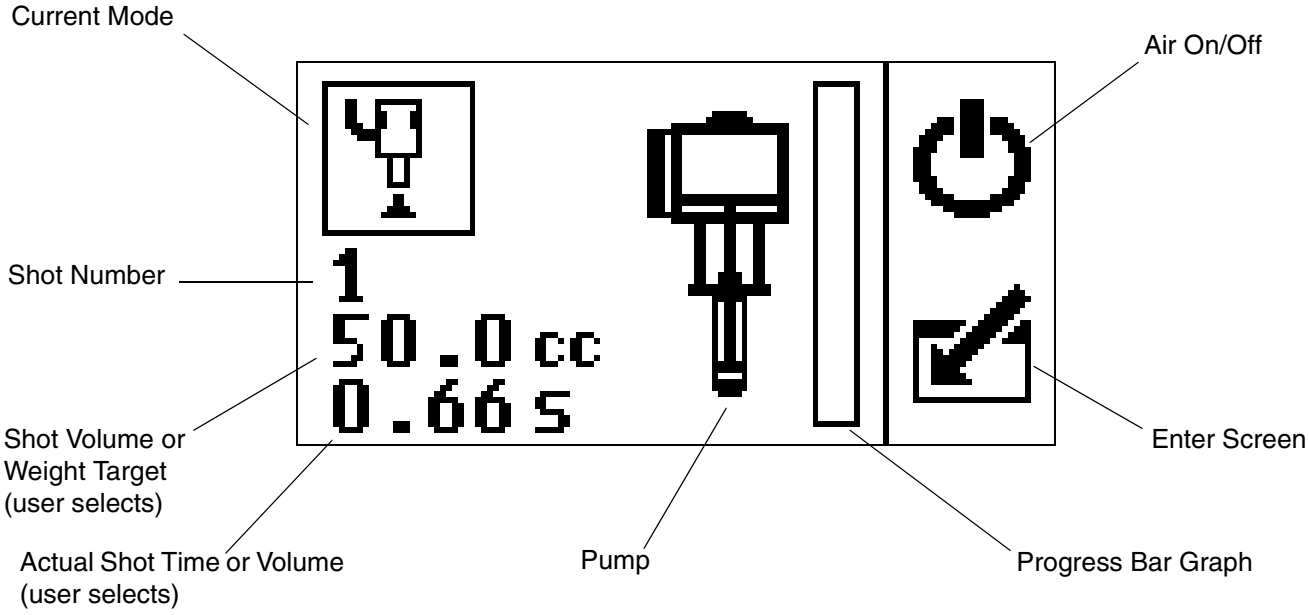
When the air valve is on, the Current Mode box displays a black background and white icon. And when the air valve is off, the Current Mode box displays a white background and black icon.

## Fluid Valve On/Off

When the fluid valve is on during a shot, the Actual Shot Volume or Time starts at zero and increments, the pump icon displays pump movement, and the Progress Bar Graph starts incrementing.

**NOTE:** The progress bar graph is only displayed during a shot.

**Run Screen in Shot Mode Shown**



## Information Screen

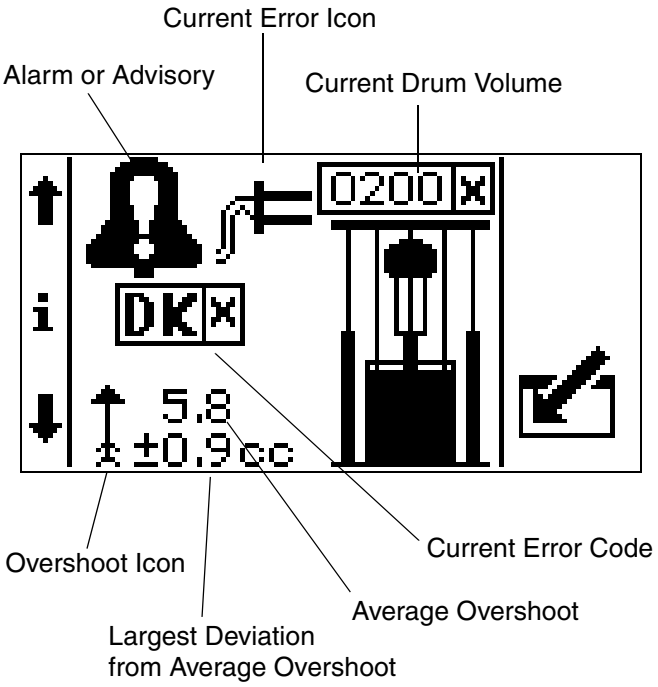
This screen displays the present alarm or advisory, along with the current error icon and error code. The information screen also displays the current volume of material in the drum. This screen also displays the average overshoot and the largest deviation from the average overshoot.

Users can clear alarms or advisories and reset the drum volume from this screen.

There are three alarm possibilities:

| Icon | Function | Description |
|---|---|---|
| | Advisory | Advisories do not require attention; therefore, the system continues running and displays next to the operation mode field. |
| | Deviation | Deviations require attention, but not immediately; therefore, the system continues running and displays next to the operation mode field. |
| | Alarm | Alarms require immediate attention; therefore, the system disables and the Information screen automatically displays. |

The information screen is accessed by pressing either from the run screen.



# Appendix B - Tips

## Calibration Procedure

Performing the calibration procedure is not necessary for the system to work. However, performing the procedure will increase shot accuracy depending on the changeover characteristics of your supply system.

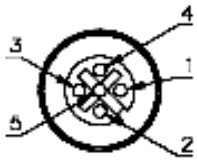
Each pump and material combination may have unique changeover characteristics (volume pumped during the changeover). Performing the calibration procedure will calibrate your particular SmartWare kit to more accurately count the material dispensed during the changeover portion of the pump stroke.

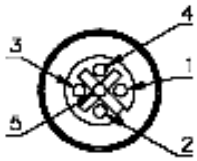
## Tips for Better Accuracy

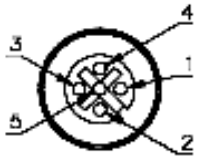
- Repeatable dispense components: Use a high quality and highly repeatability dispense valve and solenoid. Always use the greatest air pressure available to actuate the dispense valve.
- Faster valve: Use the smallest dispense valve that will work for your flow rate and pressure. A small dispense valve will open and close faster, which will reduce overshoot; see , page 92, for overshoot values. Use a large enough solenoid and large enough air lines to maximize the air flow, which will increase the speed of the dispense valve.
- Slower pump speeds: Decrease the pump speed to decrease overshoot and increase accuracy.
- If pumping higher viscosity materials with a DuraFlo pump, install a spring loaded ball check at the pump inlet. Doing so will provide more consistent pumping through the top and bottom changeovers.
- Use the smallest diameter and shortest length outlet hose possible to minimize the amount of material between the pump and the dispense point.
- Minimize the material temperature swings to help prevent changes in material properties that will affect accuracy.

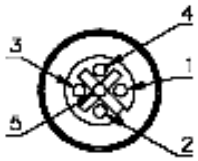
# Appendix C - Breakout Module (258999) Connections

The following table provides descriptions and pins of all connectors used on the breakout module. These can be used if the components are being wired directly to the breakout module. See **Appendix D - Y-Adapter (124273) Connections**, page 105, if the component is being connected to the Y-adapter (124273) before connecting to the breakout module.

| Light Tower Connector 2 - Blue | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Female, A code | Lamp 1 Yellow Digital Output | 4 |
| Phoenix Contact Part Number 1542761 | Lamp 2 Red Digital Output | 2 |
|  | Digital Output Power (24 volt) | 1 |
| | Digital Output Ground | 3 |
| | Shield Digital | 5 |

| Solenoid Air / Fluid Connector 3 - Red | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Female, A code | Solenoid Air Digital Output | 4 |
| Phoenix Contact Part Number 1542761 | Solenoid Fluid Digital Output | 2 |
|  | Digital Output Power (24 volt) | 1 |
| | Digital Output Ground | 3 |
| | Shield Digital | 5 |

| Solenoid Air / Fluid Connector 4 - Green | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Female, A code | Solenoid Changeover Kit Top Digital Output | 4 |
| Phoenix Contact Part Number 1542761 | Solenoid Changeover Kit Bottom Digital Output | 2 |
|  | Digital Output Power (24 volt) | 1 |
| | Digital Output Ground | 3 |
| | Shield Digital | 5 |

| Prox / Start - Stop Connector 5 - Grey | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Female, A code | Drum Low Digital Input | 4 |
| Phoenix Contact Part Number 1542761 | Start / Stop Digital Input | 2 |
|  | Digital Input Power (24 volt) | 1 |
| | Digital Input Ground | 3 |
| | Shield Digital | 5 |

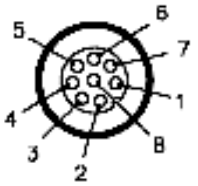


| Pressure Connector 6 - Blue | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Female, B code | Pressure Differential Analog Input + | 4 |
| Phoenix Contact Part Number 1543650 | Pressure Differential Analog Input - | 2 |
| | Pressure Power (5 volt) | 1 |
| | Pressure Ground | 3 |
| | Shield Analog | 5 |



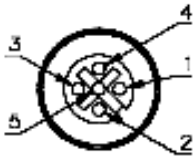
| Shot Active Connector 8 - Grey | Pin Description | Pin Number |
|---|---|---|
| M8 Connector, 4 pin, Female | Shot Active (5 volts) or Not Active (0 volts) Analog Output | 4 |
| Phoenix Contact Part Number 1694376 | Shot Active Power (5 volt) | 1 |
| | Shot Active Ground | 3 |
| | Shield Analog | 2 |

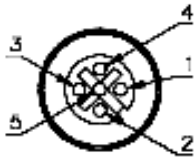


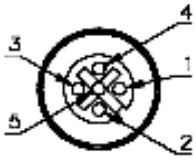
| Air Motor Connector 9 - Grey | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 8 pin, Female, A code | Motor Top Reed Switch Digital Input | 3 |
| Phoenix Contact Part Number 1542774 | Motor Bottom Reed Switch Digital Input | 4 |
|  | Reed Switch Ground | 5 |
| | Linear Sensor Analog Input | 1 |
| | Linear Sensor Power (5 volt) | 6 |
| | Linear Sensor Ground | 7 |
| | Shield Analog | 8 |

# Appendix D - Y-Adapter (124273) Connections

The Y-adapter is used when two components are connected to the same connector on the breakout module. The branch connectors, labeled 1 and 2, have identical pinouts and are combined in the trunk connector. The following table provides descriptions and pins of all connectors used on the Y-adapter.

| Branch Connector 1 - Black | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Female, A code | Digital Input or Output | 4 |
| Used for Drum Low Input and Solenoid Air Output | Not Used | 2 |
|  | Power | 1 |
| | Ground | 3 |
| | Shield Digital | 5 |

| Branch Connector 2 - Silver | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Female, A code | Digital Input or Output | 4 |
| Used for Start / Stop Input and Solenoid Fluid Output | Not Used | 2 |
|  | Power | 1 |
| | Ground | 3 |
| | Shield Digital | 5 |

| Trunk Connector - Silver | Pin Description | Pin Number |
|---|---|---|
| M12 Connector, 5 pin, Male, A code | Digital Input or Output from Branch 1 | 4 |
|  | Digital Input or Output from Branch 2 | 2 |
| | Power | 1 |
| | Ground | 3 |
| | Shield Digital | 5 |

# Accessories

### Changeover Kits, 262453 and 262464

Use the changeover kit to increase shot accuracy and eliminate changeovers on shots that are less than 20% of the pump volume. There are two changeover kits available. For NXT2200 and larger air motors, order 262453. For NXT1800 and smaller air motors, order 262464.

### Foot Switch Kit, 262530

The foot switch kit enables the operator to trigger the dispense valve using a foot pedal.

# Dimensions

For supply system or pump package dimensions, refer to the supply system or pump package manual.

# Technical Data

| | |
|---|---|
| Power supply requirements | 100 – 240 Vac, 50/60 Hz, single phase, 1.2 amps max |
| Pressure transducer manifold: maximum working fluid pressure | 7500 psi (52.5 MPa, 5.25 bar) |
| Ambient operating temperature range | 32 – 120°F (0 – 49°C) |
| Operating humidity range | 0 – 90% non-condensing |

# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

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Original instructions. This manual contains English. MM 3A0294

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